

FIG. 1

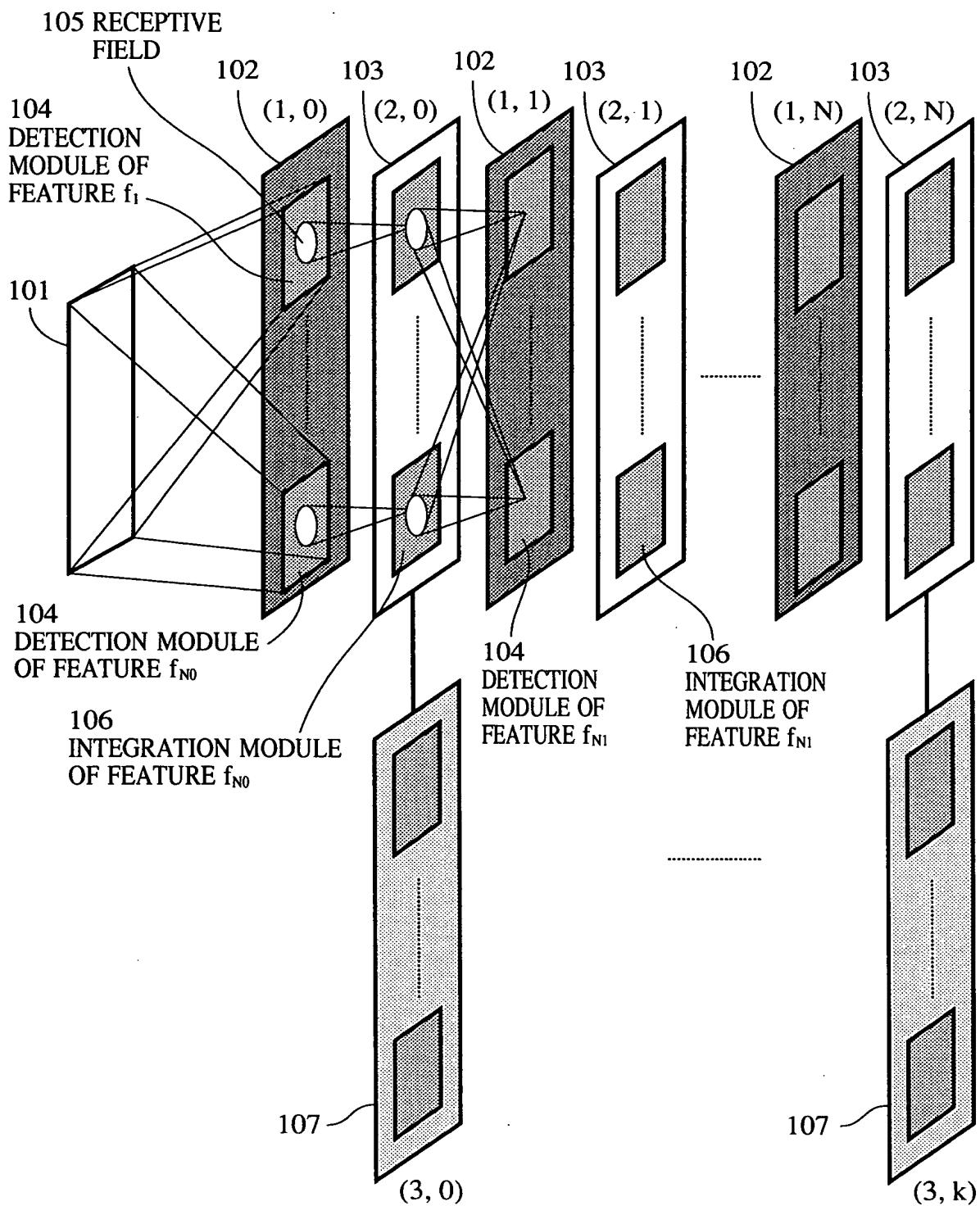


FIG. 2A

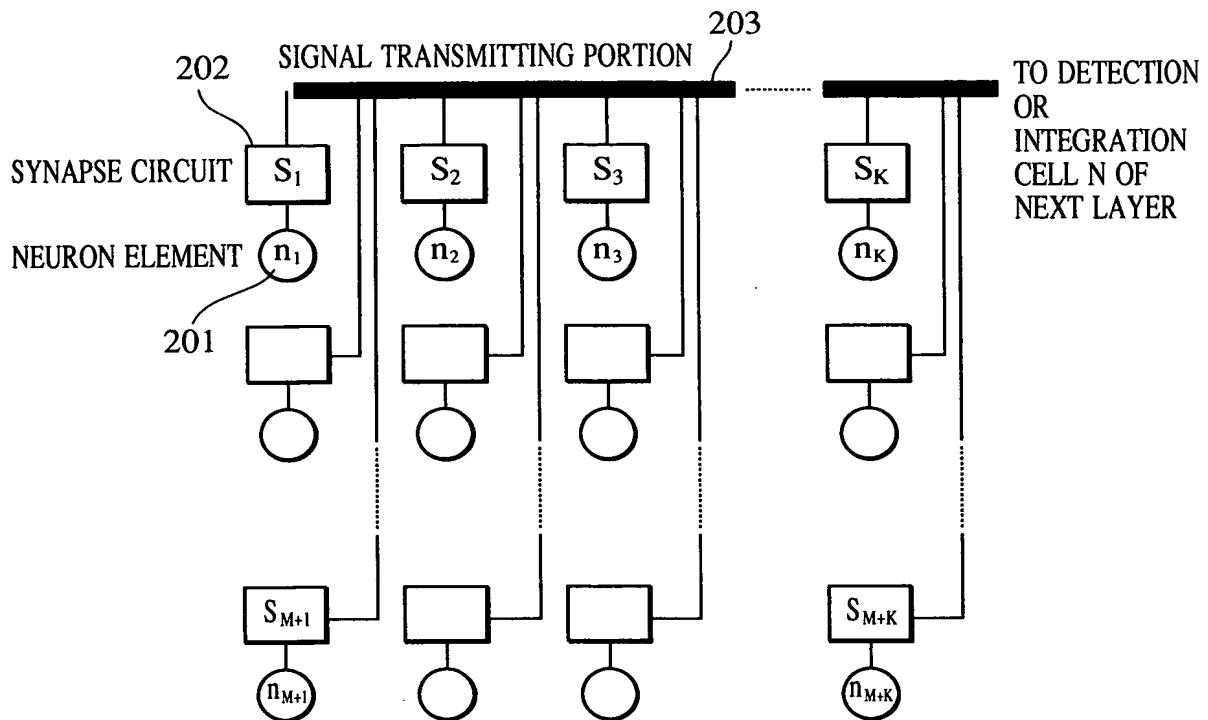


FIG. 2B

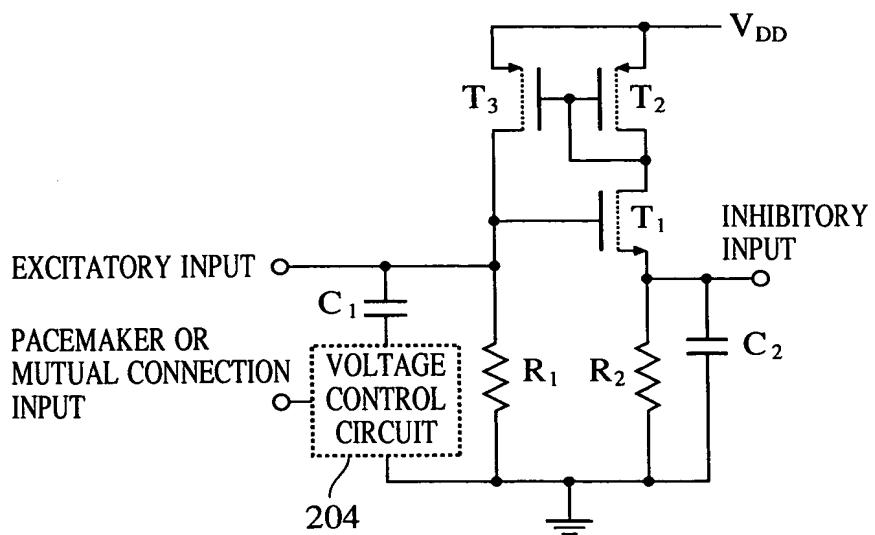


FIG. 2C

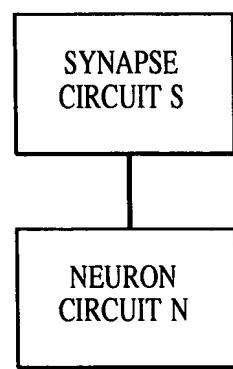


FIG. 3A

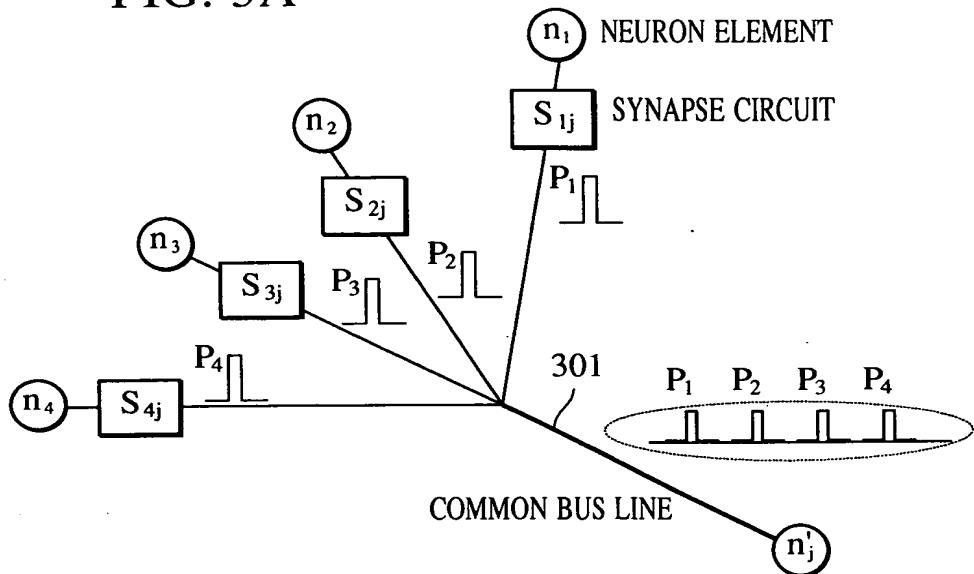


FIG. 3B

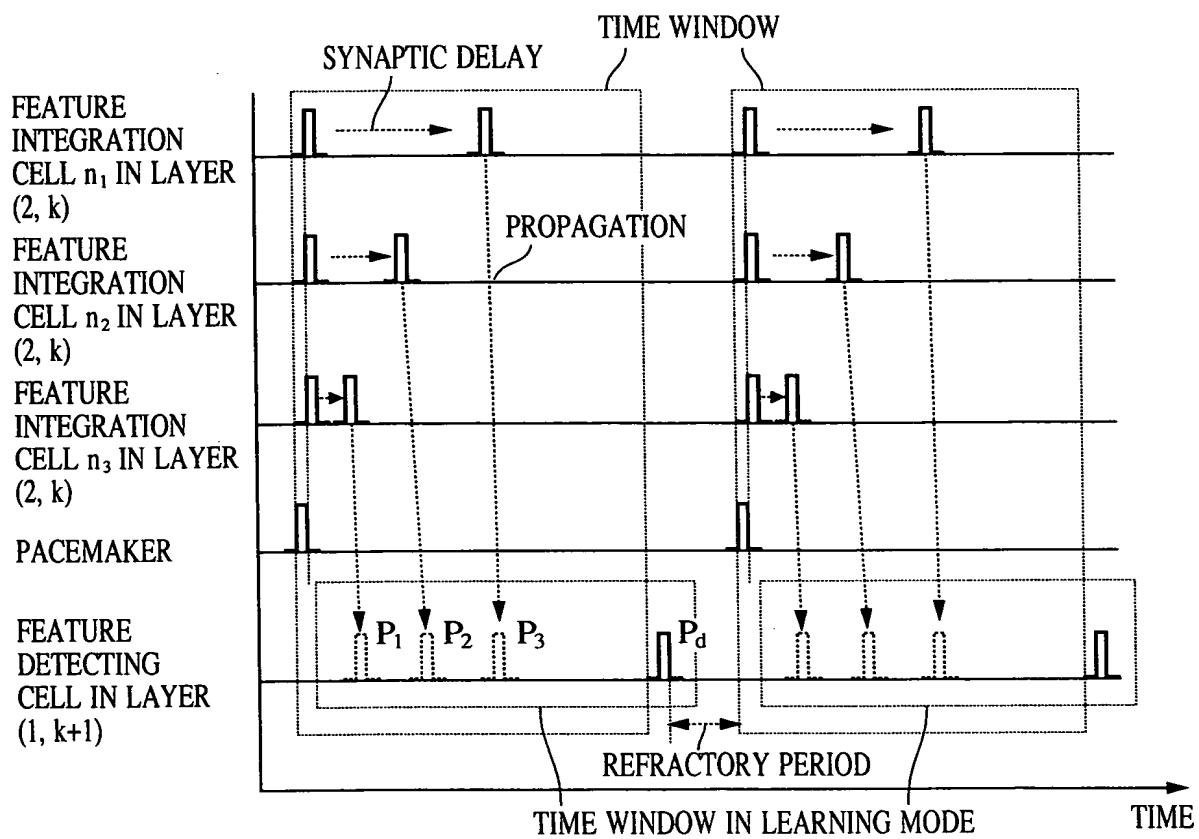


FIG. 4A

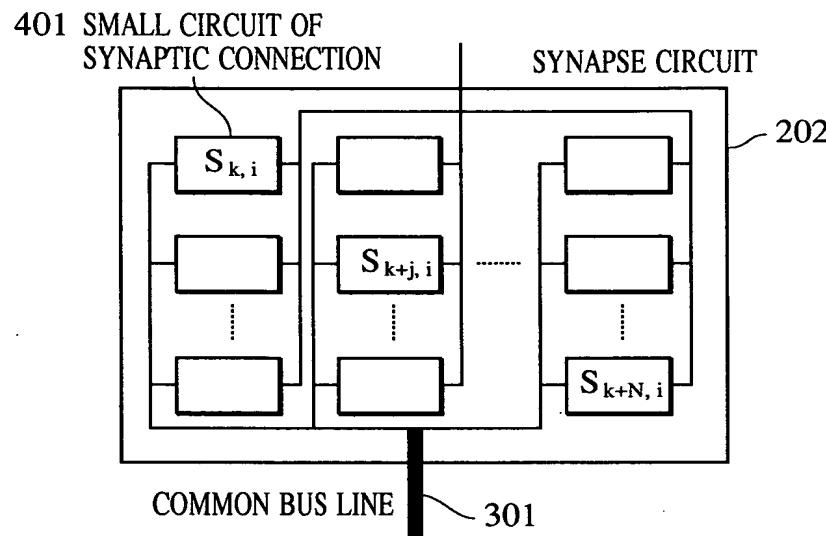


FIG. 4B

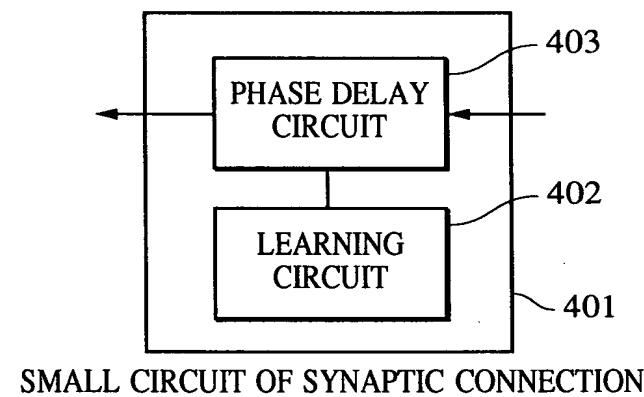


FIG. 4C

(LOCAL) COMMON BUS LINE

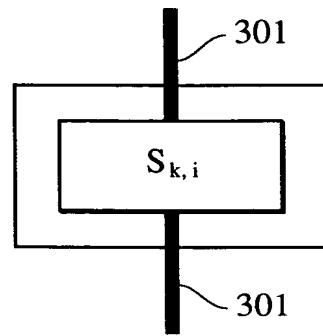


FIG. 5A

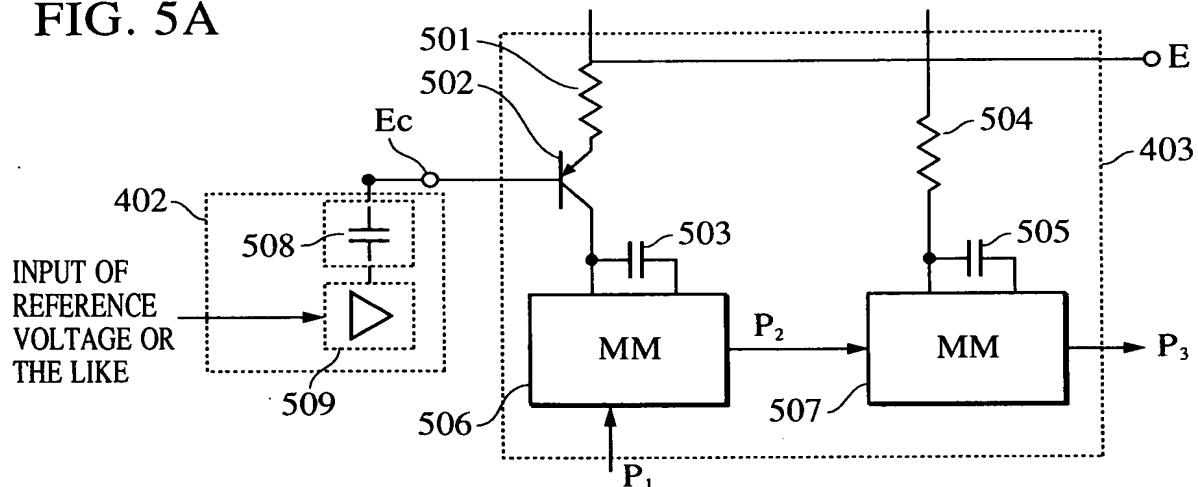


FIG. 5B

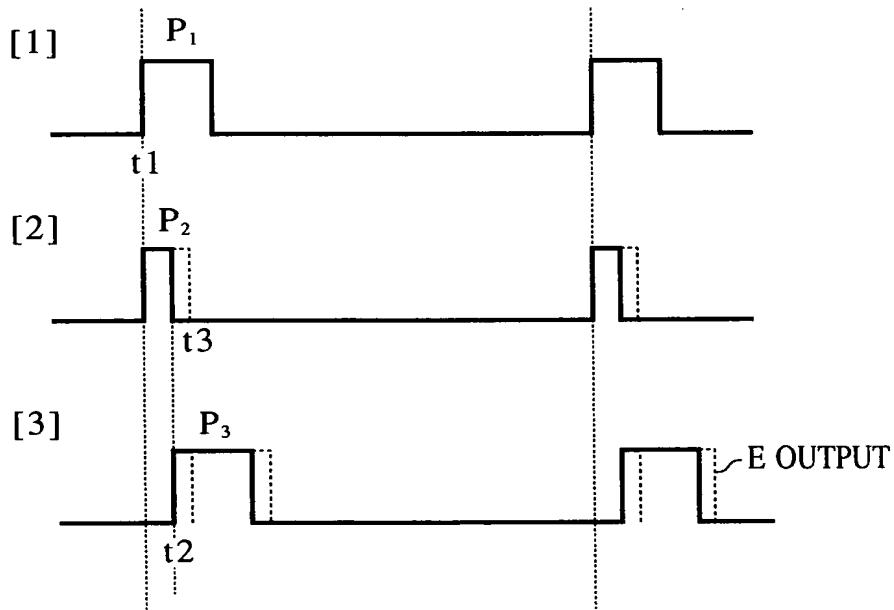


FIG. 5C

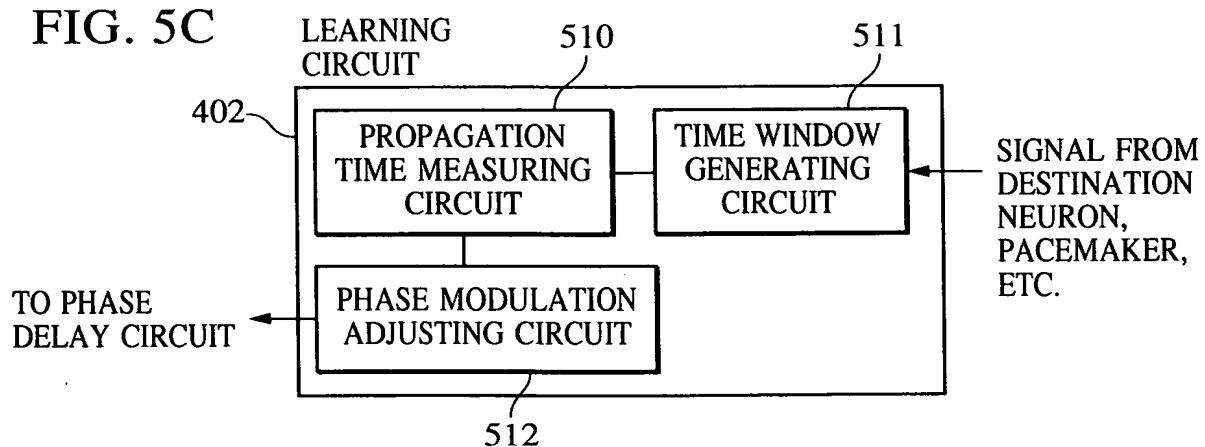


FIG. 6

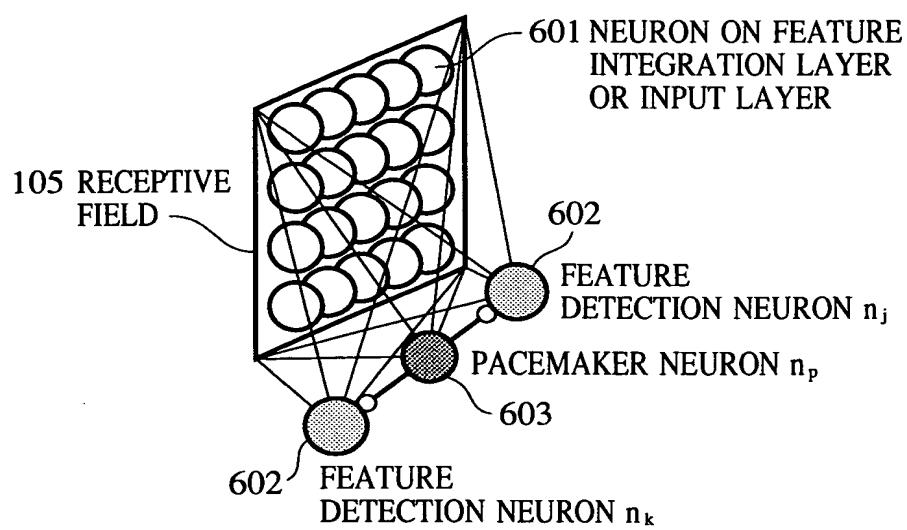


FIG. 7A

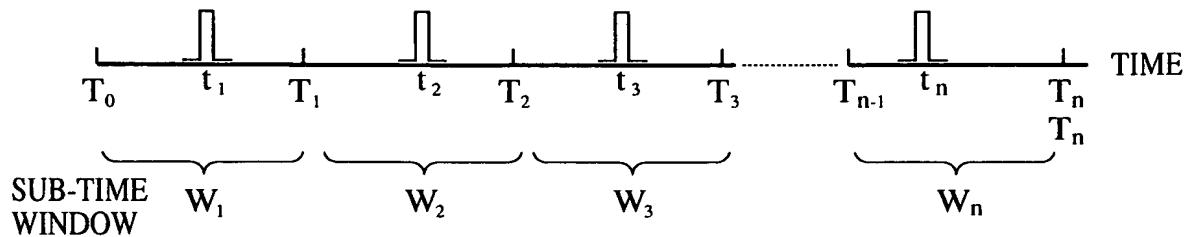


FIG. 7B

WEIGHTING FUNCTION

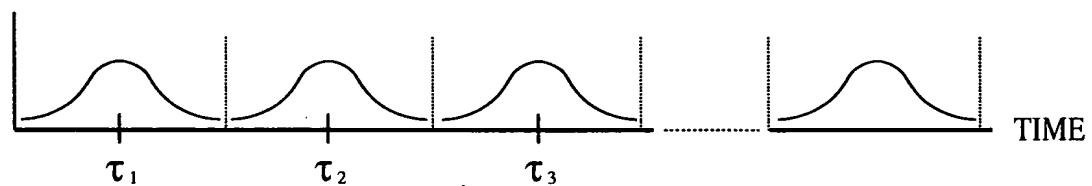


FIG. 7C

$$\begin{array}{llll}
 f_{11} : & \swarrow & f_{21} : & \swarrow \\
 f_{12} : & \nearrow & f_{22} : & \searrow \\
 f_{13} : & \wedge & f_{23} : & \angle \\
 & & f_{31} : & \angle \swarrow \\
 & & f_{32} : & \wedge \\
 & & f_{33} : & \angle
 \end{array}
 \quad
 \begin{array}{ll}
 f_{41} : & \nwarrow \\
 f_{42} : & \nearrow \\
 f_{43} : & \rangle
 \end{array}$$

FIG. 7D

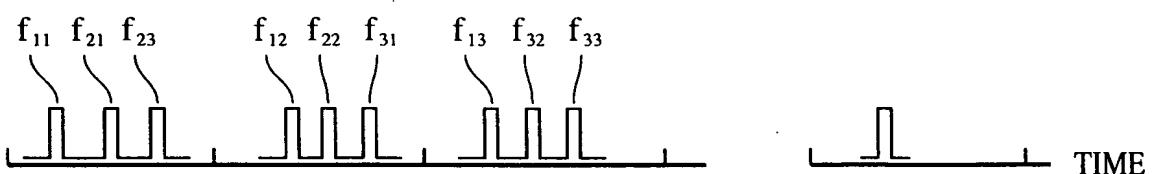


FIG. 7E

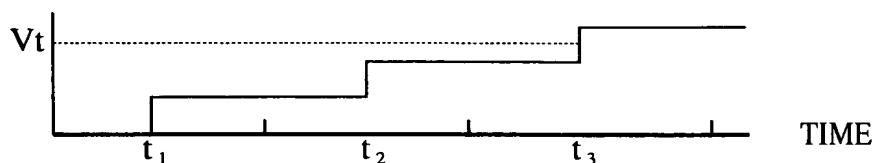


FIG. 8

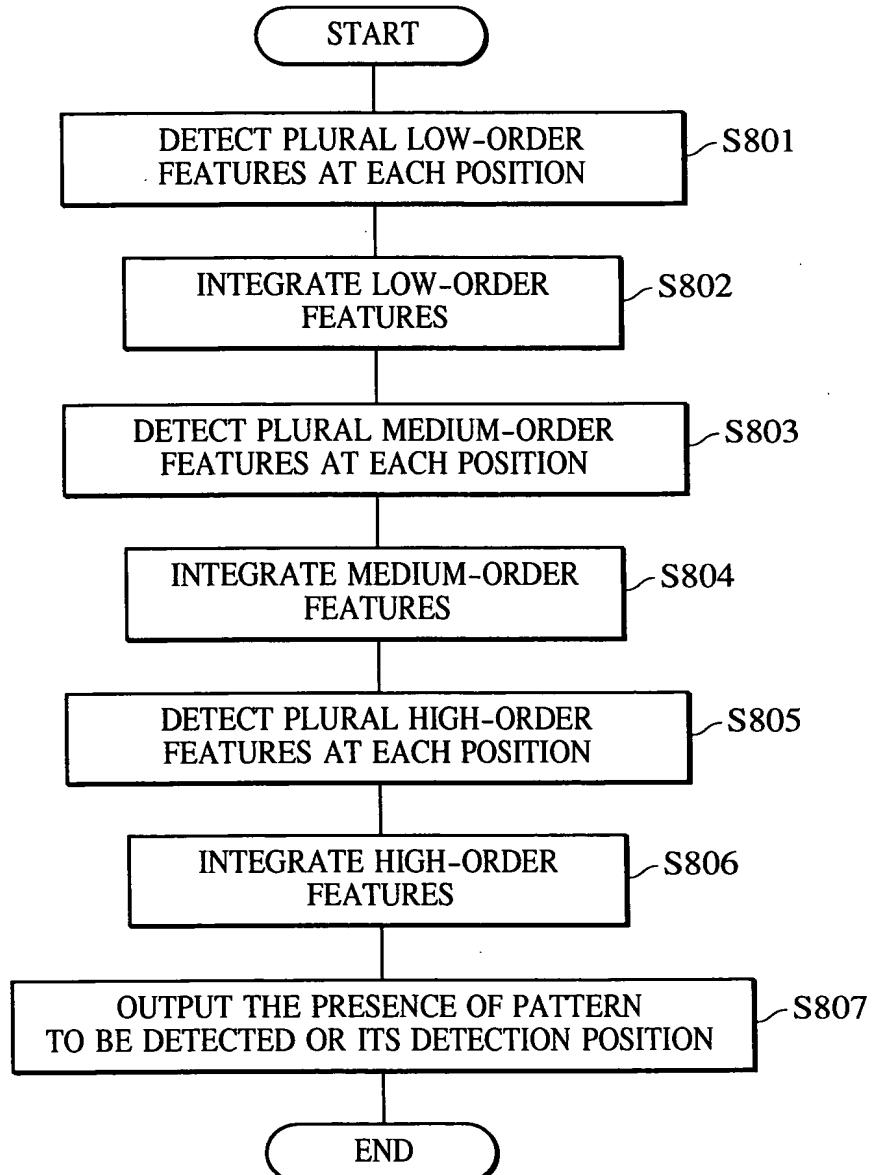


FIG. 9

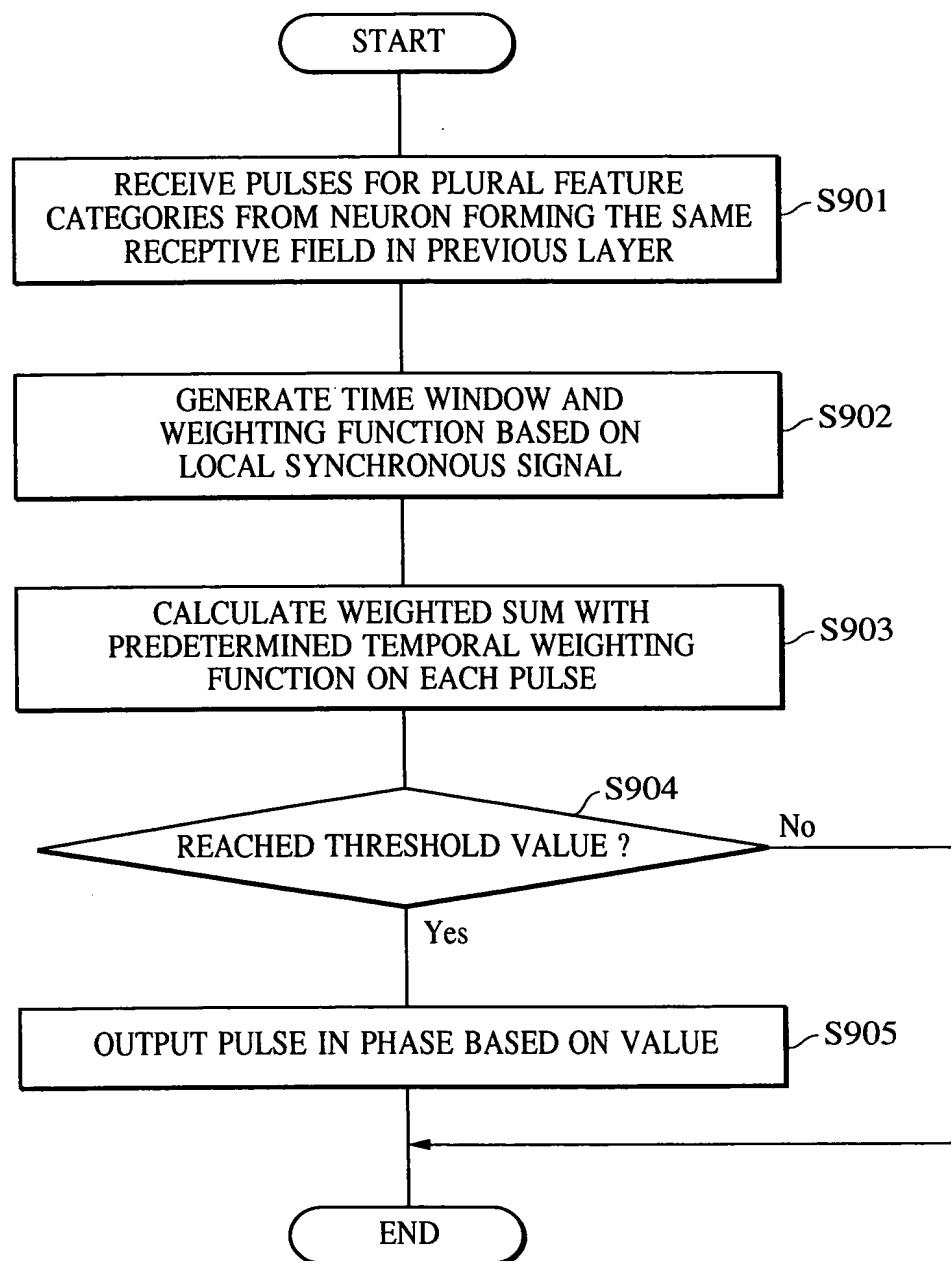


FIG. 10

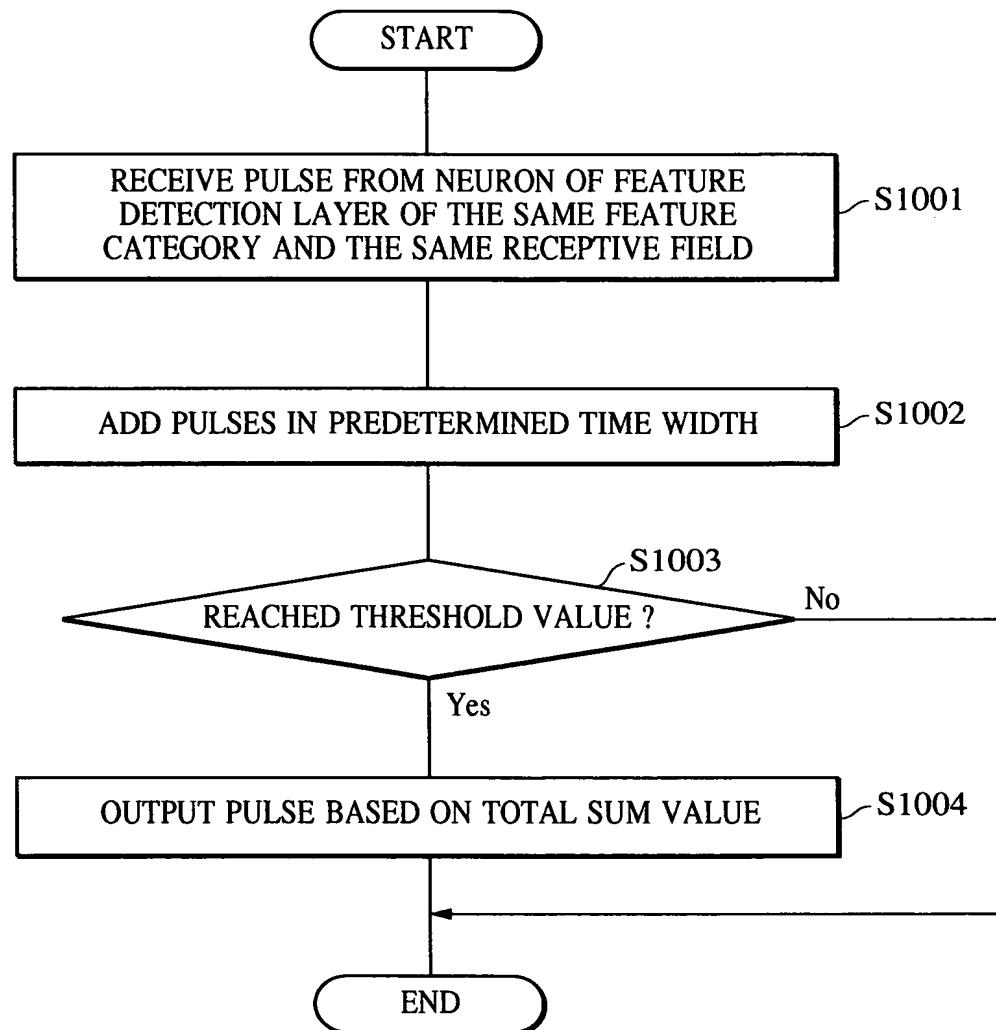


FIG. 11

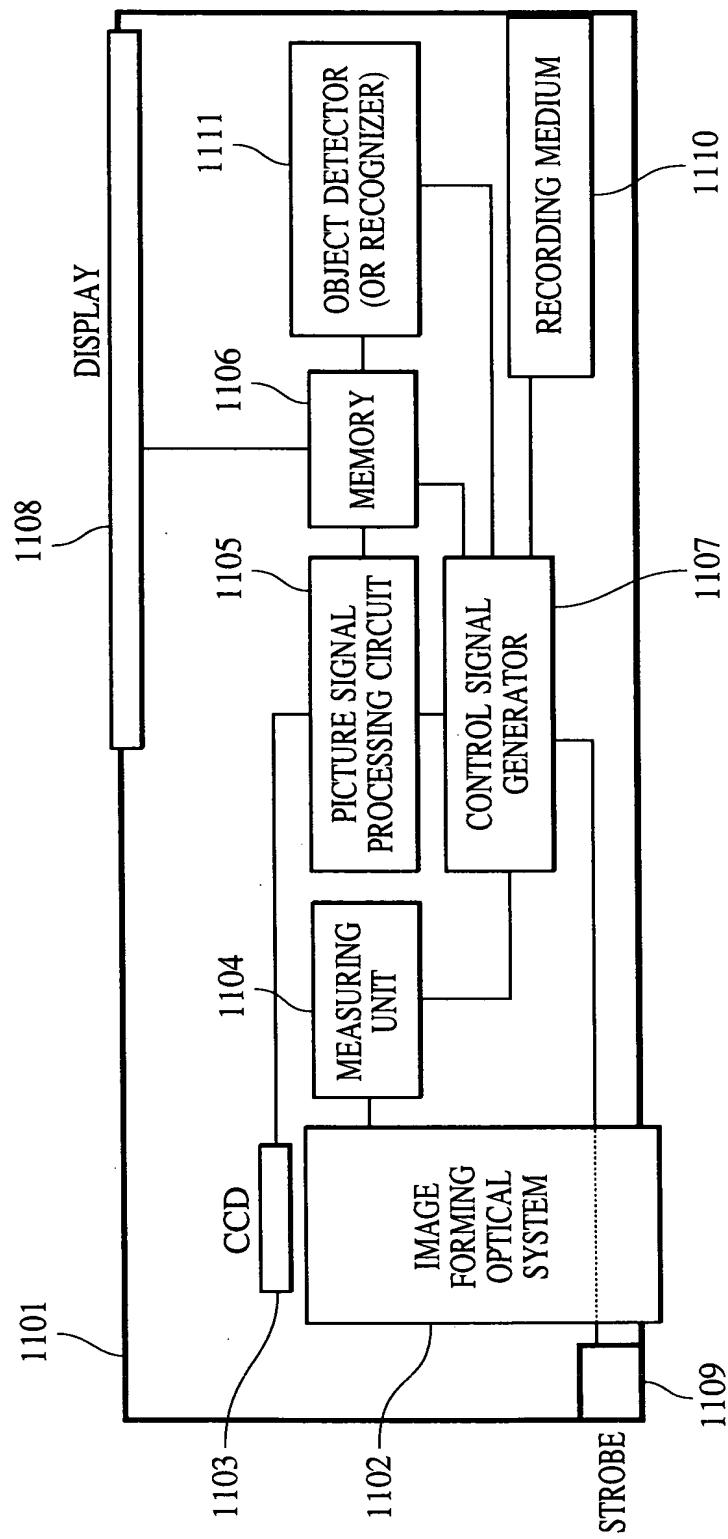


FIG. 12A

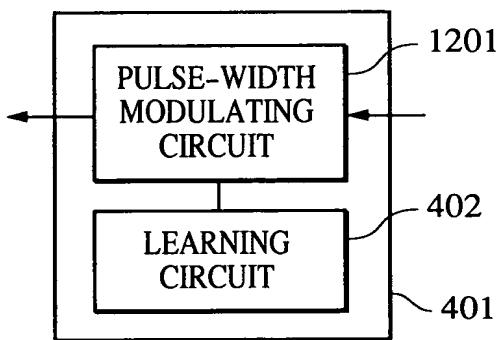


FIG. 12B

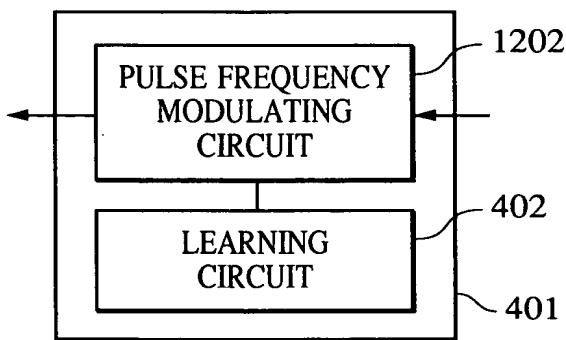


FIG. 13

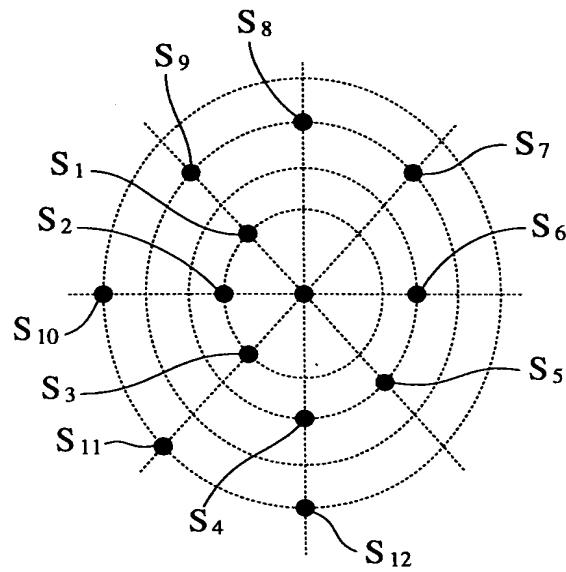


FIG. 14

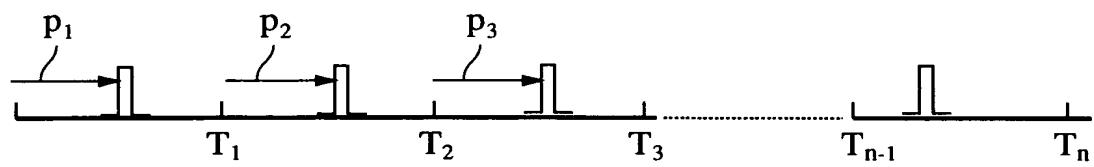


FIG. 15

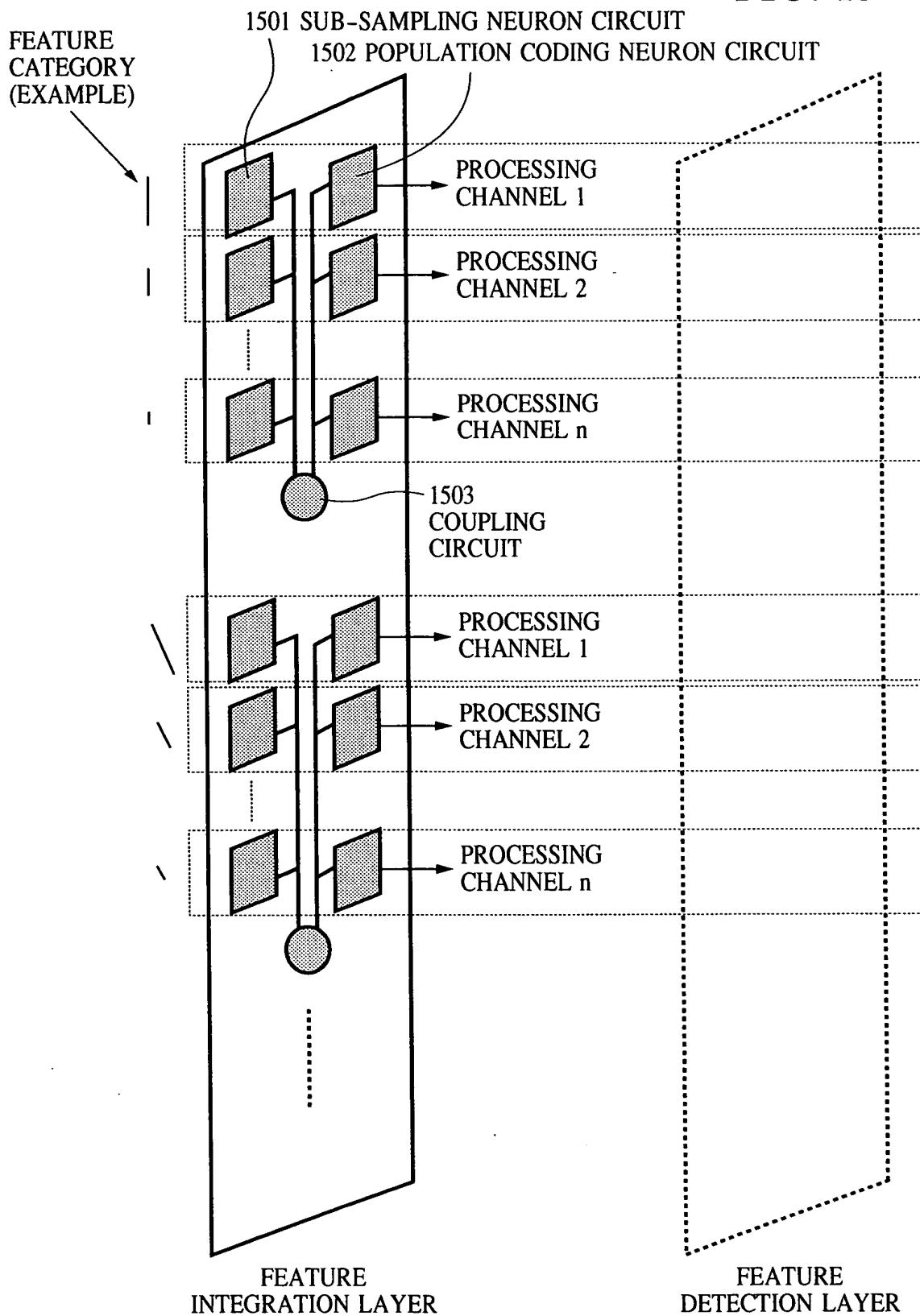


FIG. 16

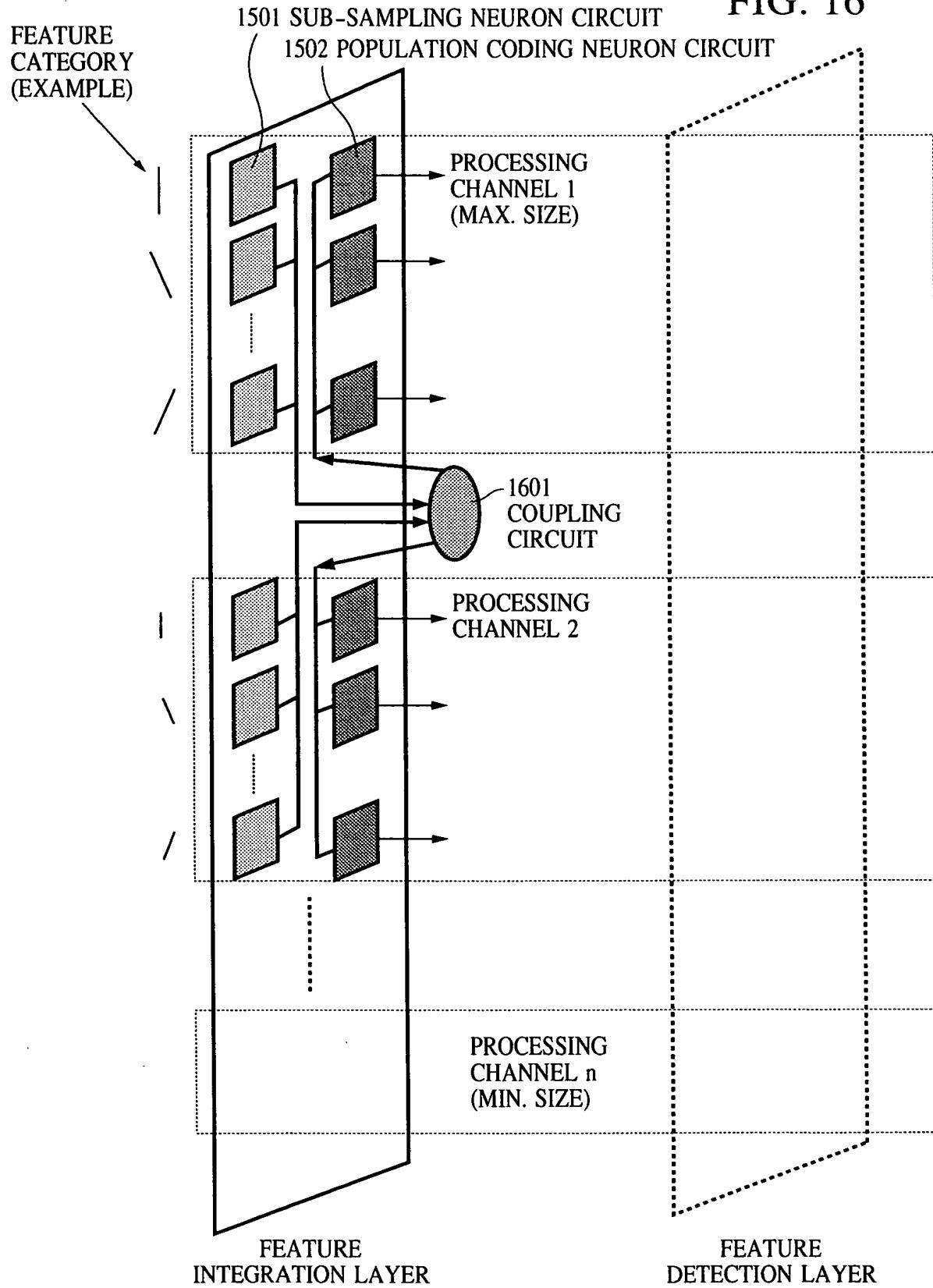


FIG. 17

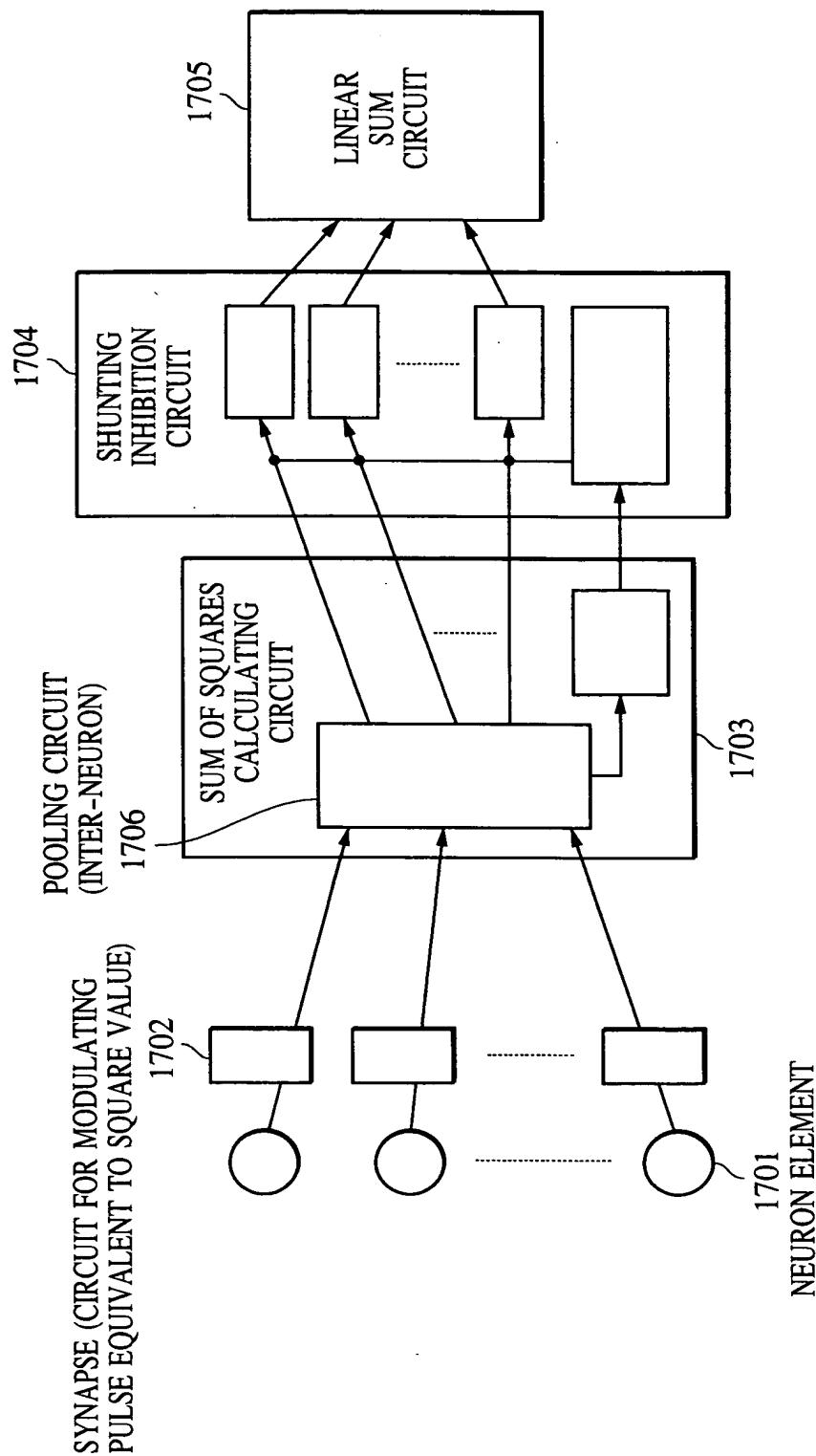


FIG. 18

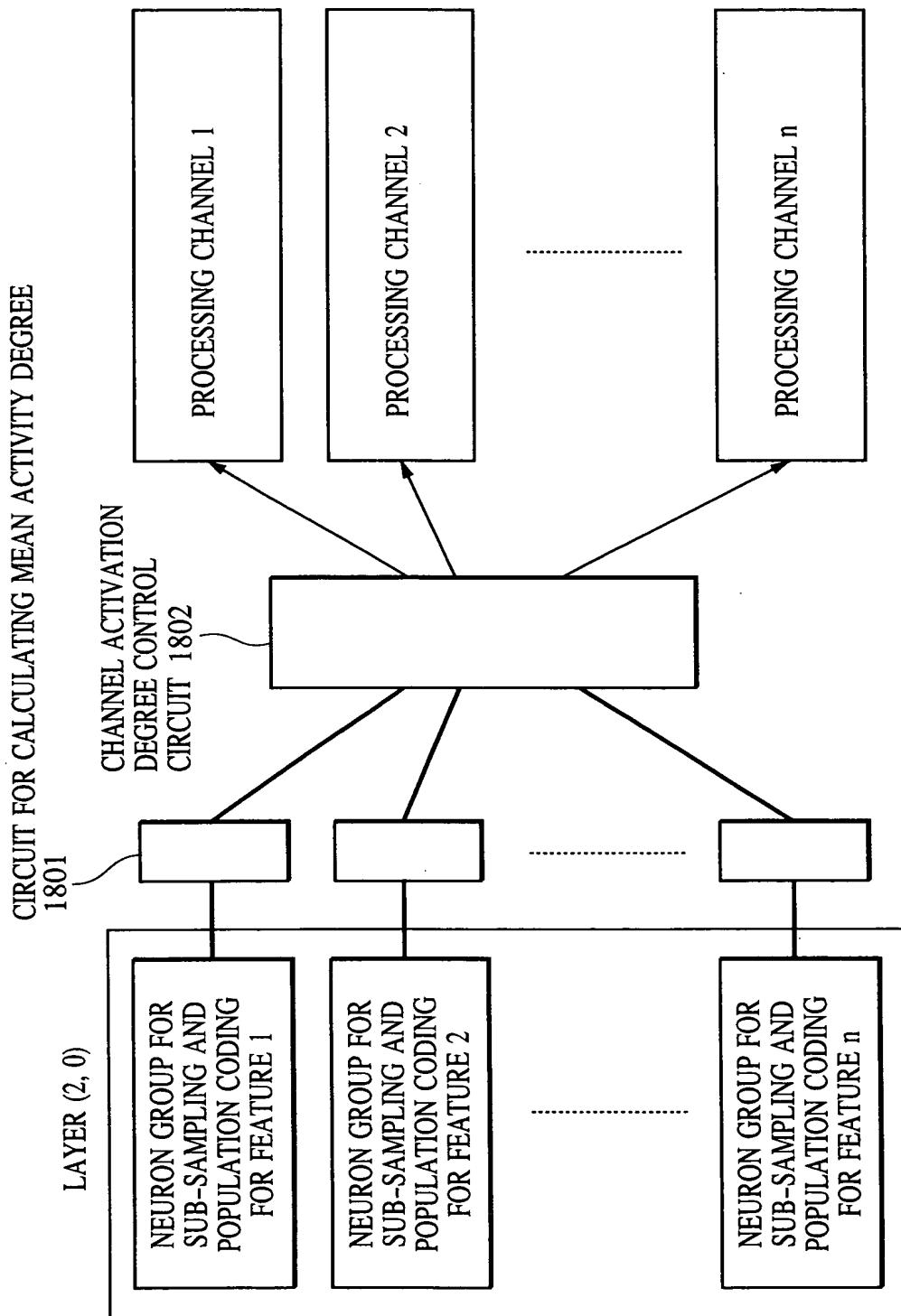


FIG. 19A
CIRCUIT FOR CALCULATING MEAN ACTIVITY DEGREE
LAYER (2, 0)
1901
1902
GATING CIRCUIT
1902
NEURON GROUP FOR
SUB-SAMPLING AND
POPULATION CODING
FOR FEATURE 1
NEURON GROUP FOR
SUB-SAMPLING AND
POPULATION CODING
FOR FEATURE 2
.....
NEURON GROUP FOR
SUB-SAMPLING AND
POPULATION CODING
FOR FEATURE n

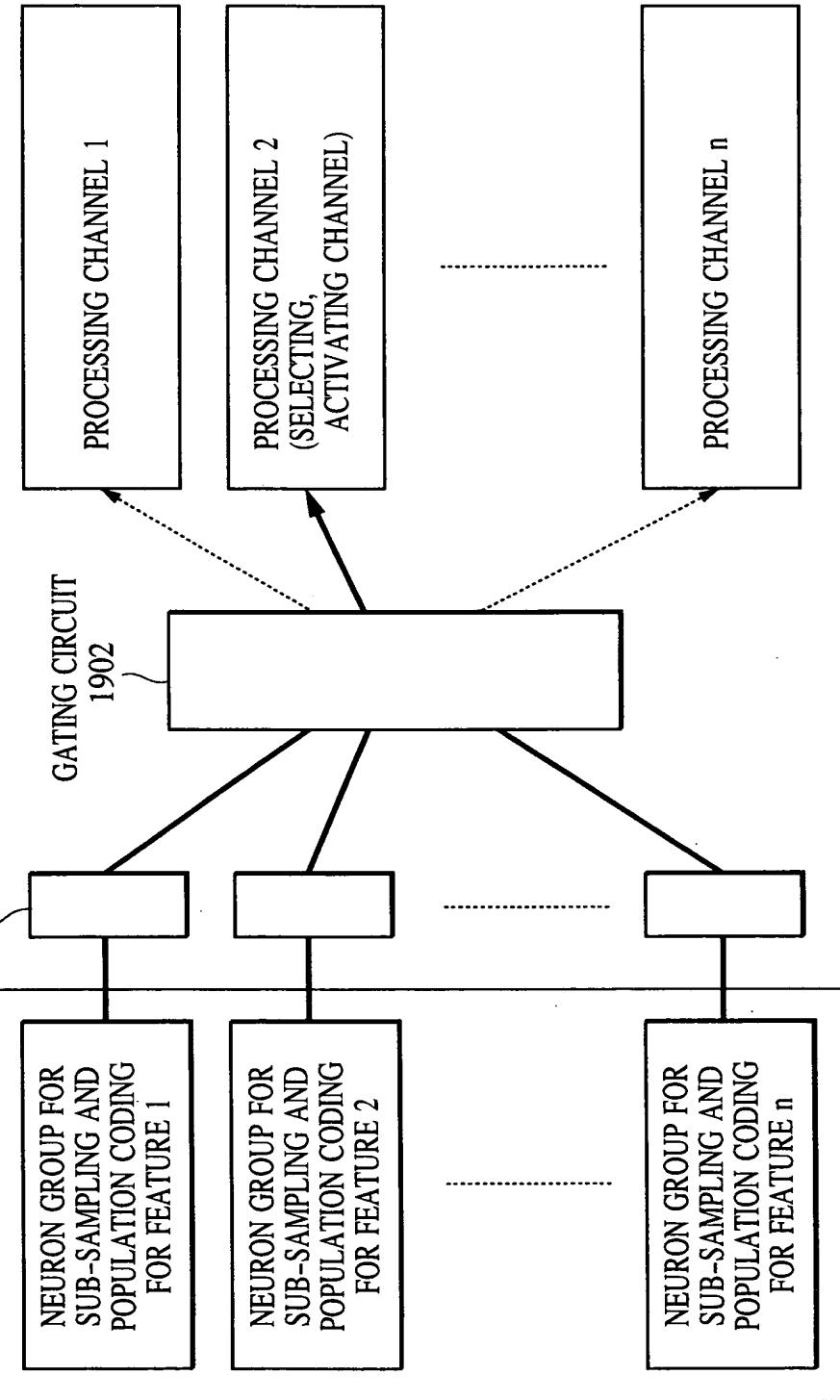


FIG. 19B

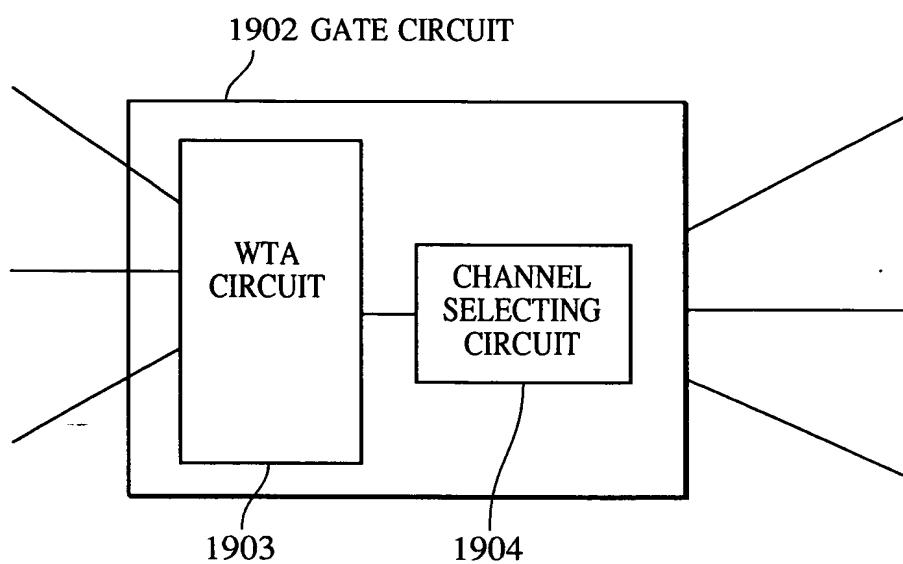


FIG. 20

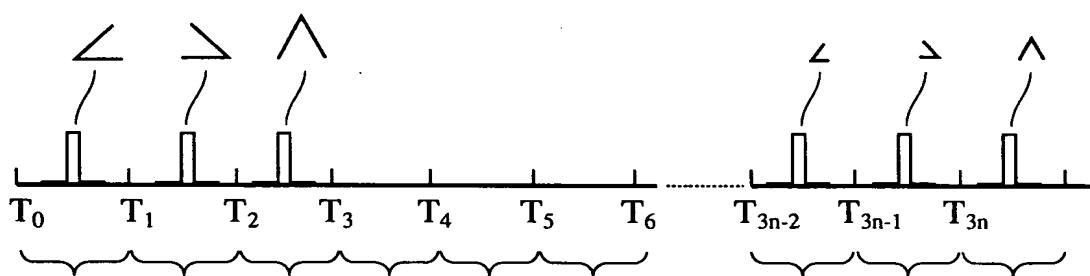


FIG. 21

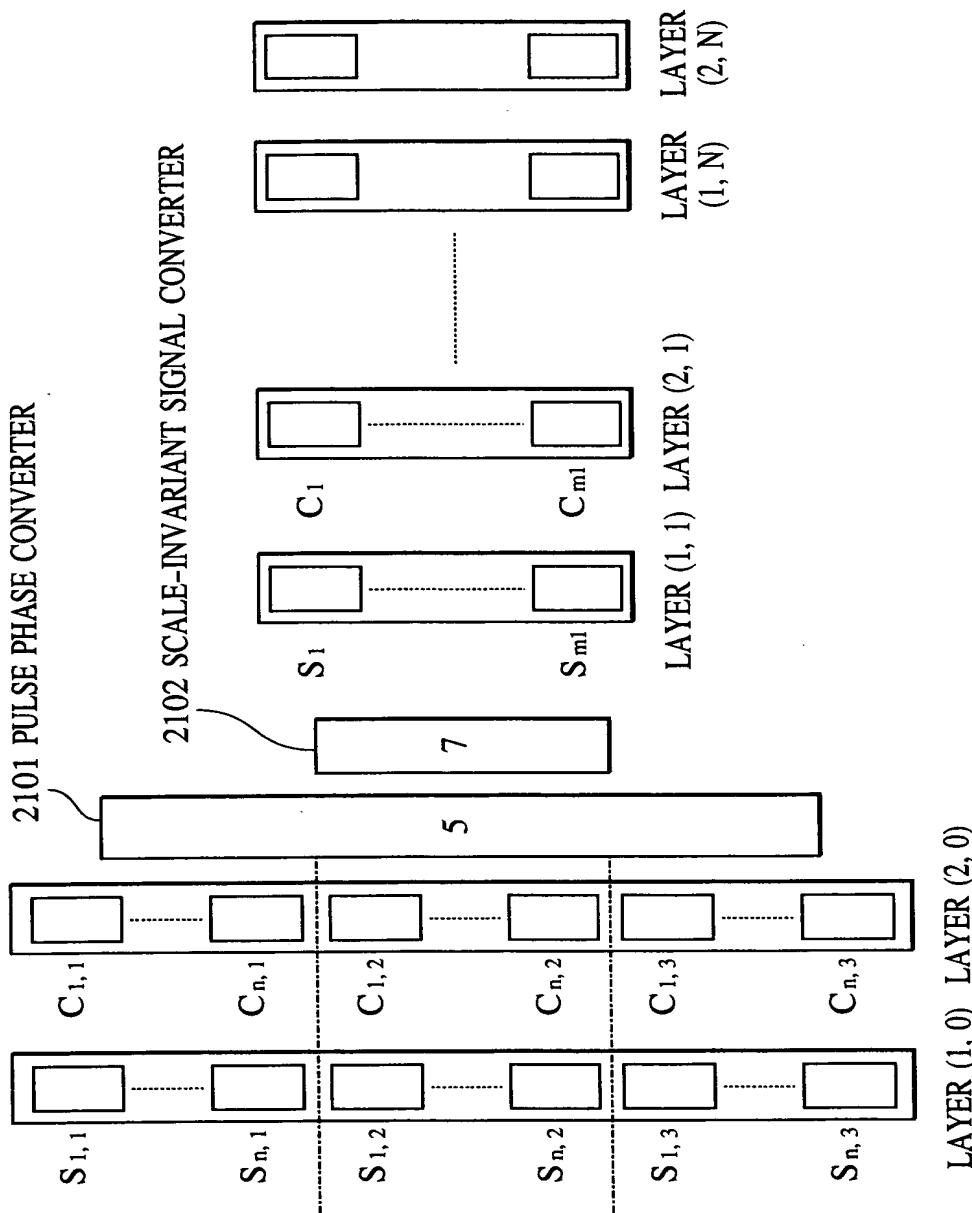


FIG. 22

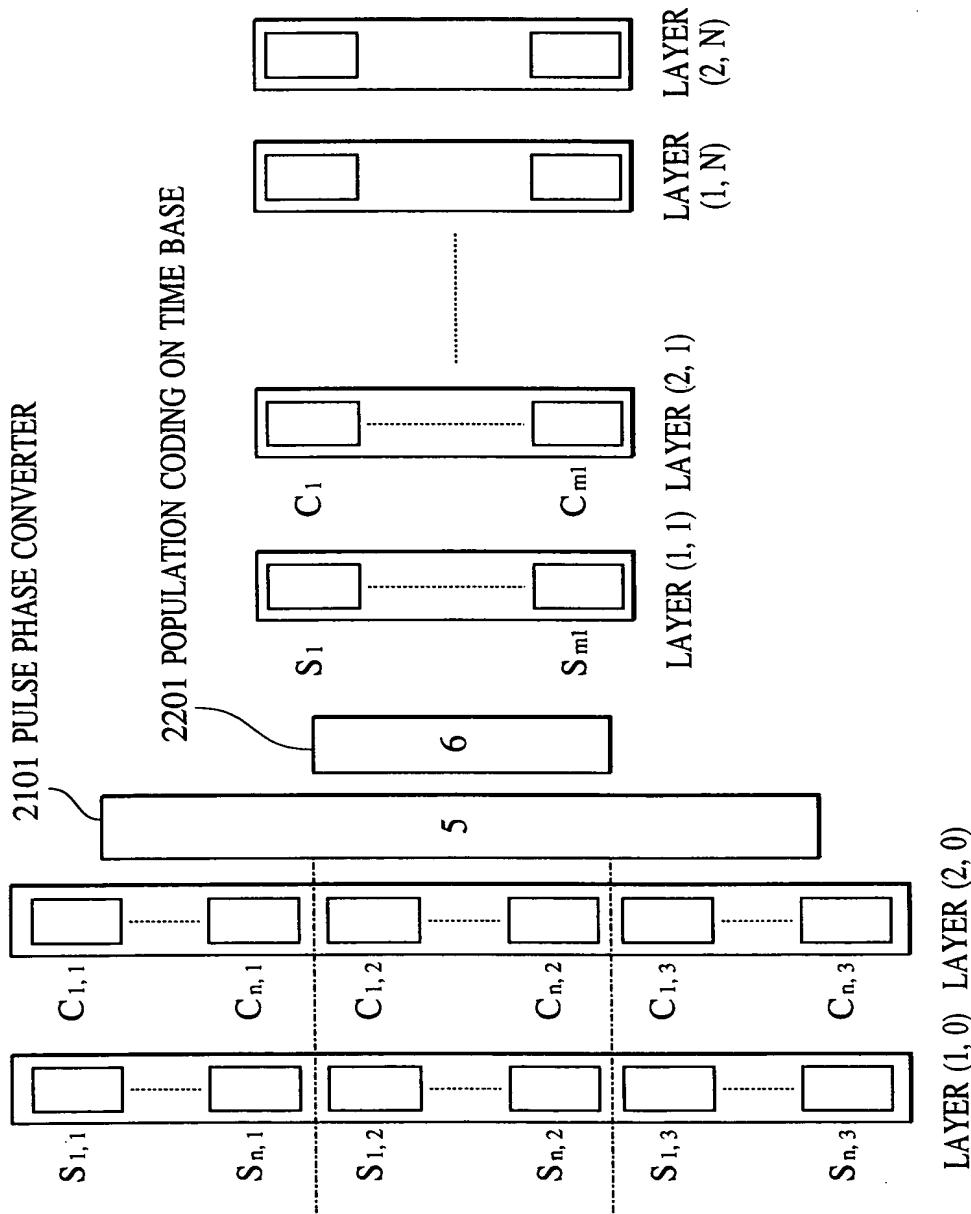


FIG. 23A

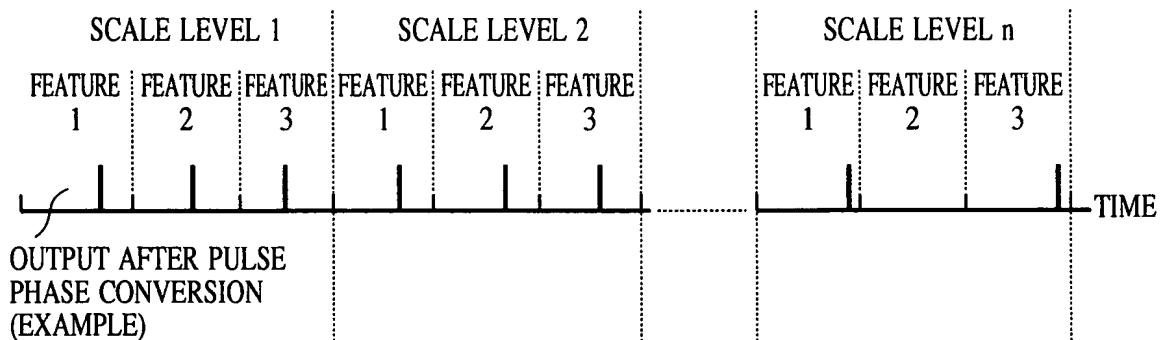


FIG. 23B

TIME WINDOW WEIGHTING FUNCTION FOR
FEATURE DETECTION CELL OUTPUT
OF POPULATION CODING CELL OF
FEATURE INTEGRATION LAYER AFTER
CHANNEL 1 (SCALE LEVEL 1) IS SELECTED BY
GATING CIRCUIT

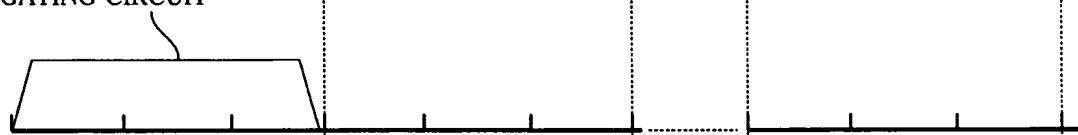


FIG. 23C

SCALE-INVARIANT SIGNAL OBTAINED AS A RESULT
OF POPULATION CODING CELL OUTPUT OF
CHARACTERISTIC INTEGRATION LAYER

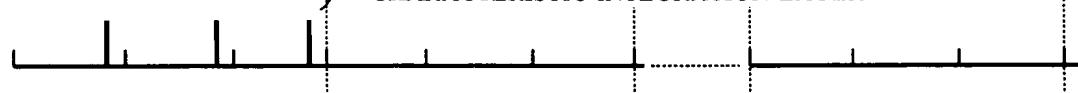


FIG. 23D

PULSE TRAIN AFTER SCALE-INVARIANT SIGNAL IS
DISTRIBUTED AND COPIED TO CHANNEL ADJACENT
TO CHANNEL 1 IN LEARNING MODE



FIG. 24A

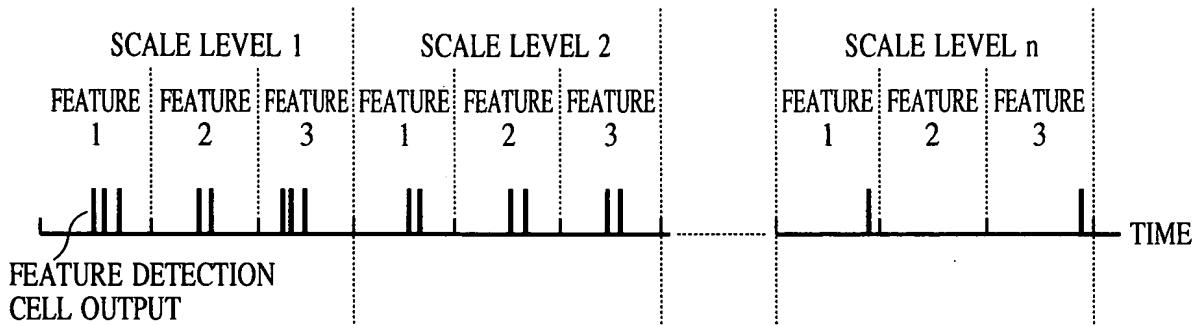


FIG. 24B

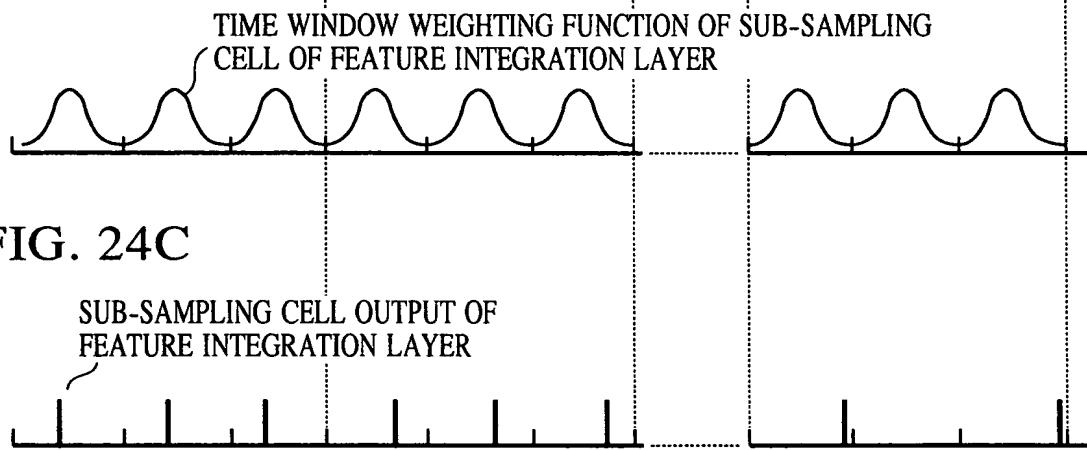


FIG. 24D

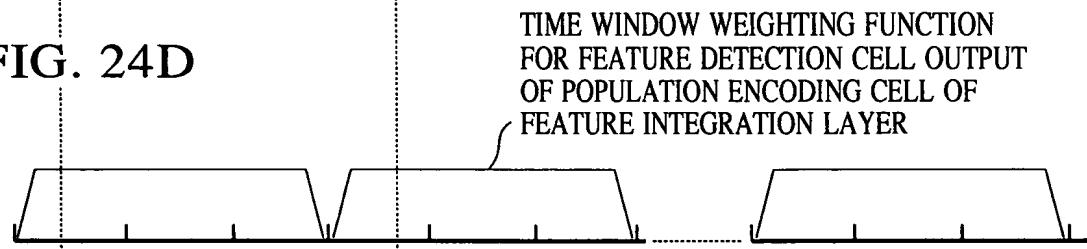


FIG. 24E

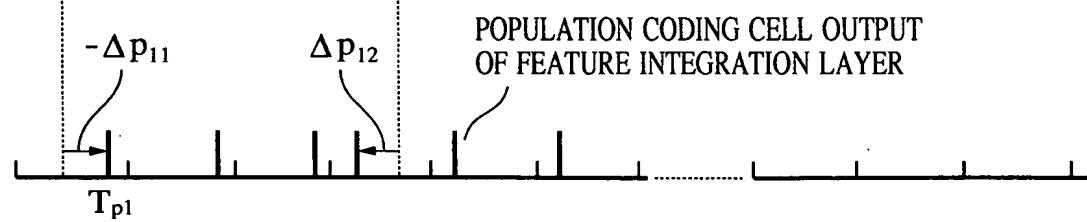
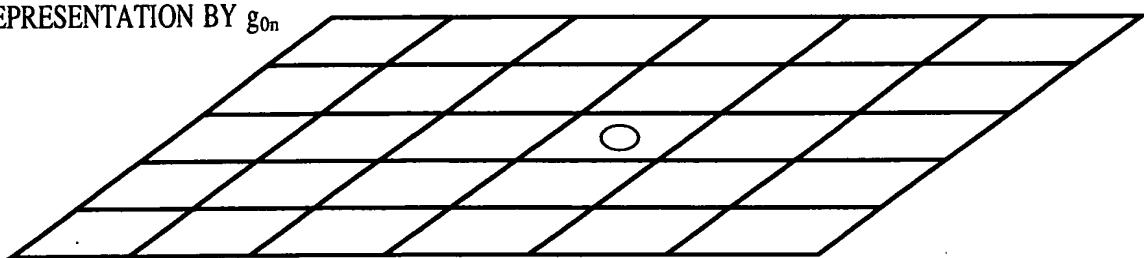
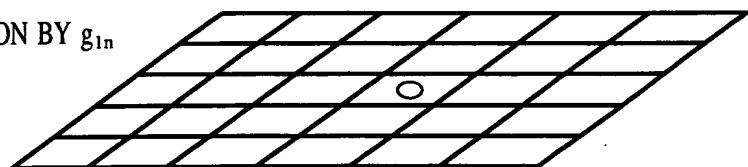


FIG. 25

REPRESENTATION BY g_{0n}



REPRESENTATION BY g_{1n}



REPRESENTATION BY g_{2n}

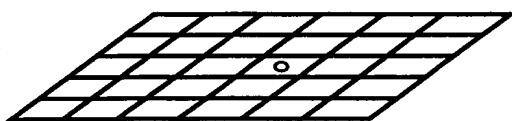


FIG. 26

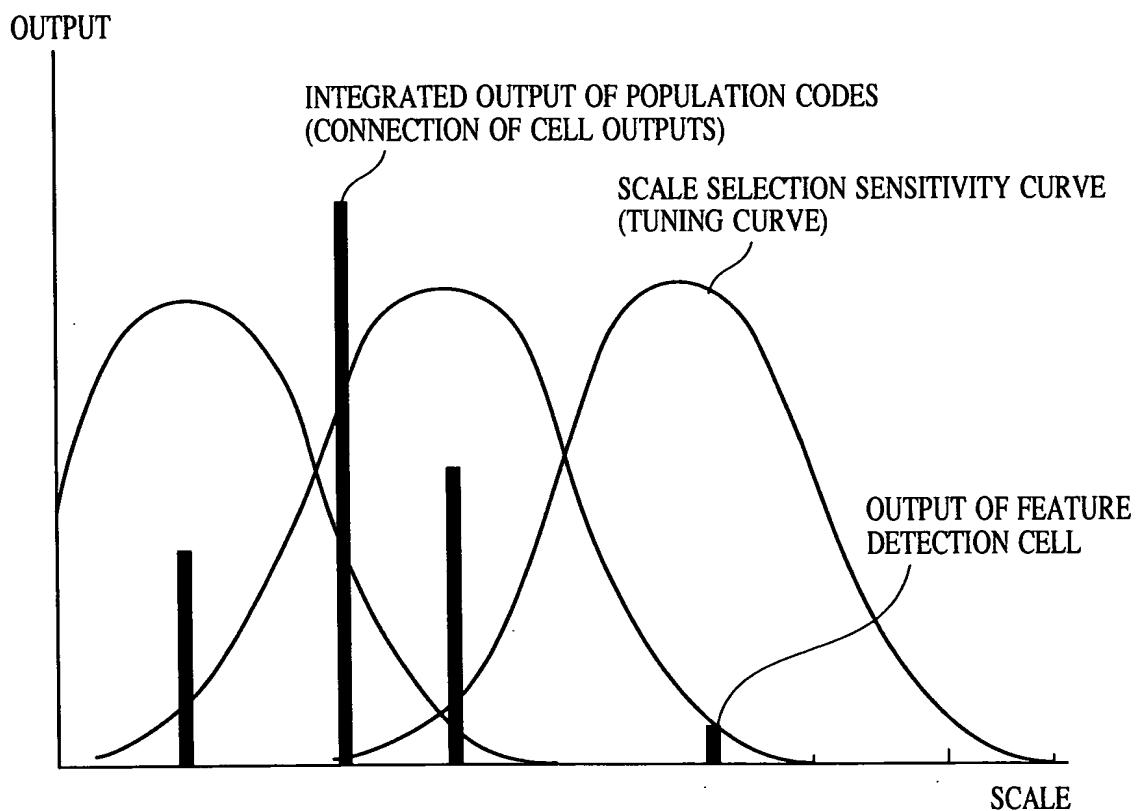


FIG. 27

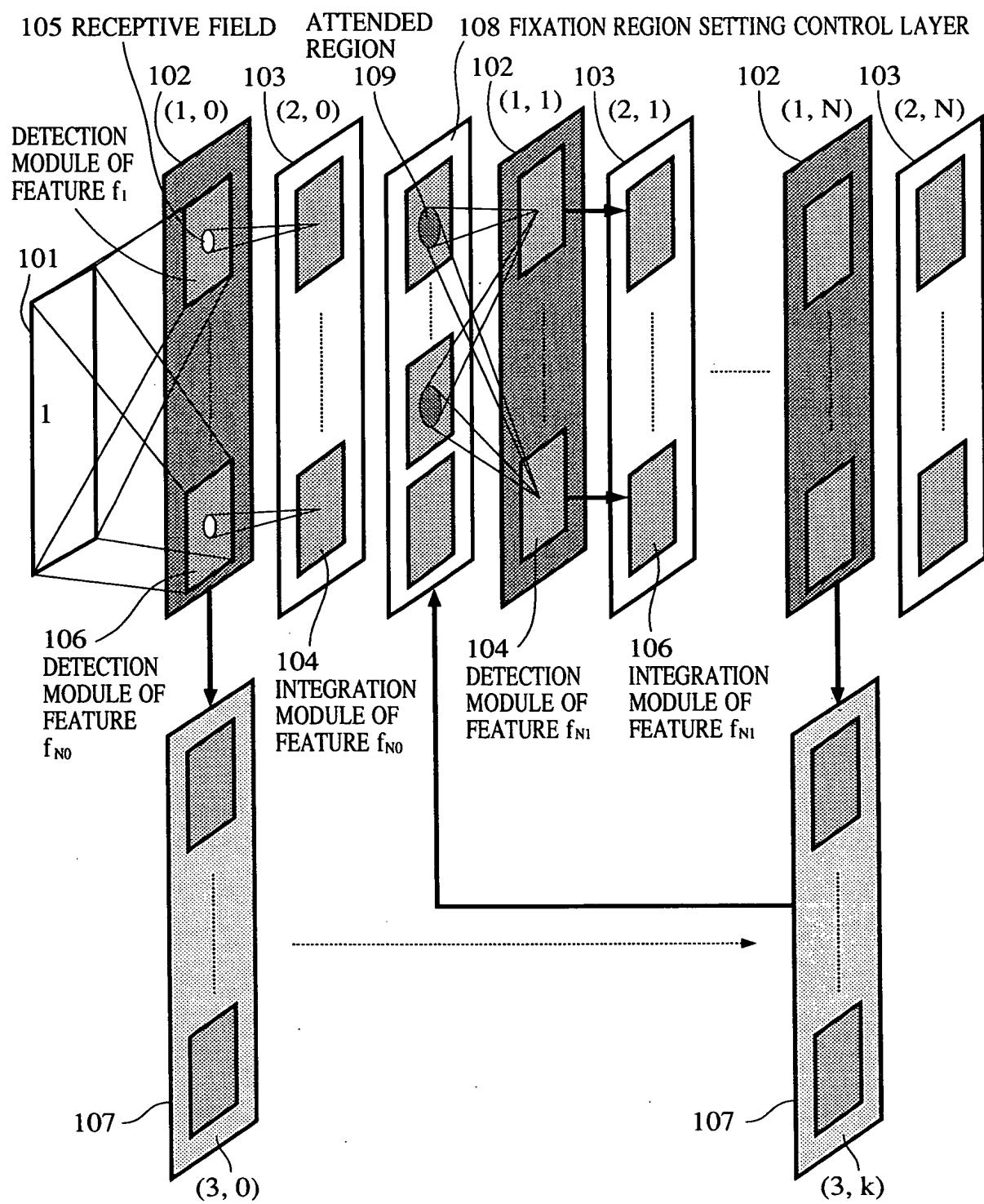


FIG. 28

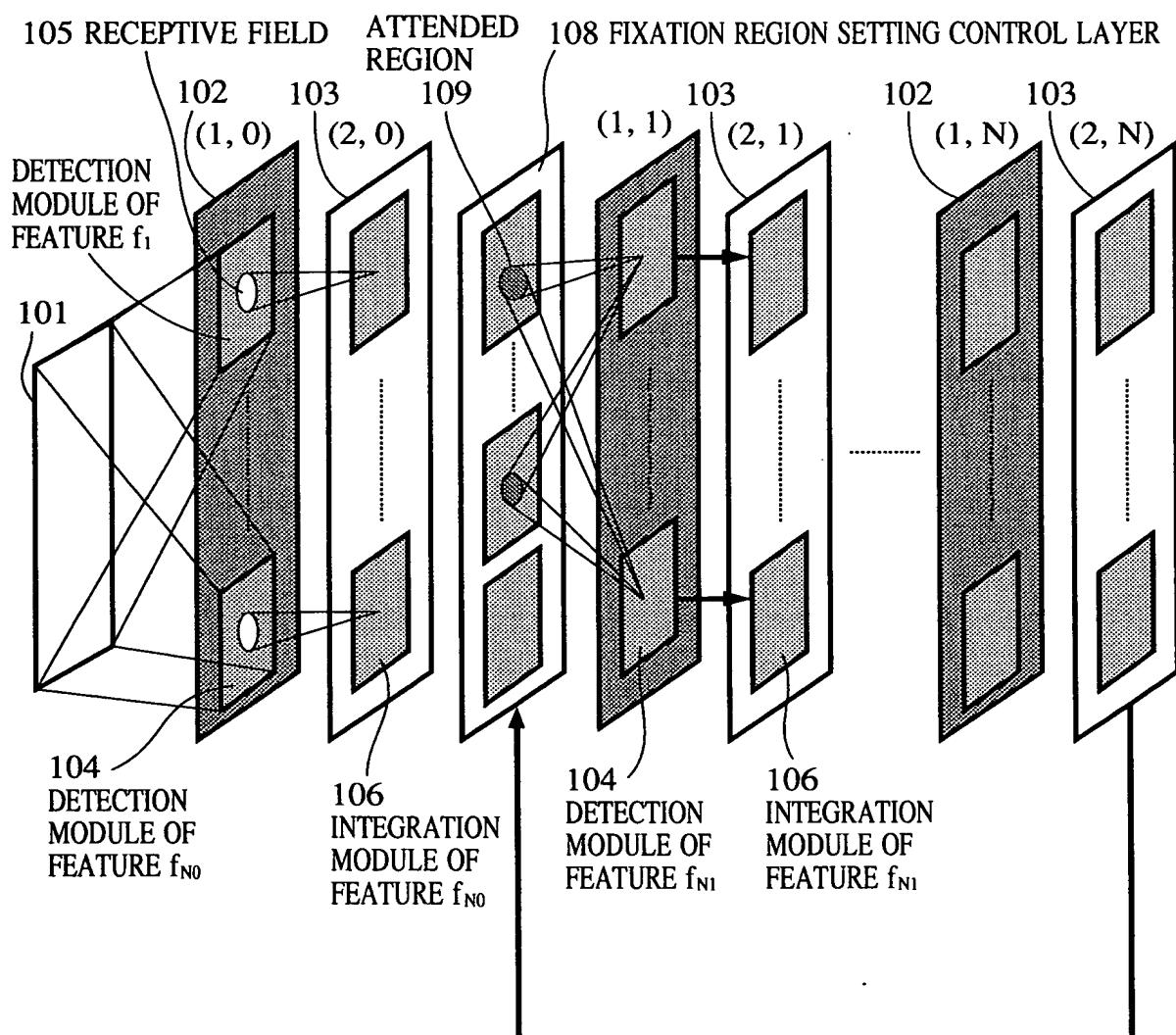


FIG. 29

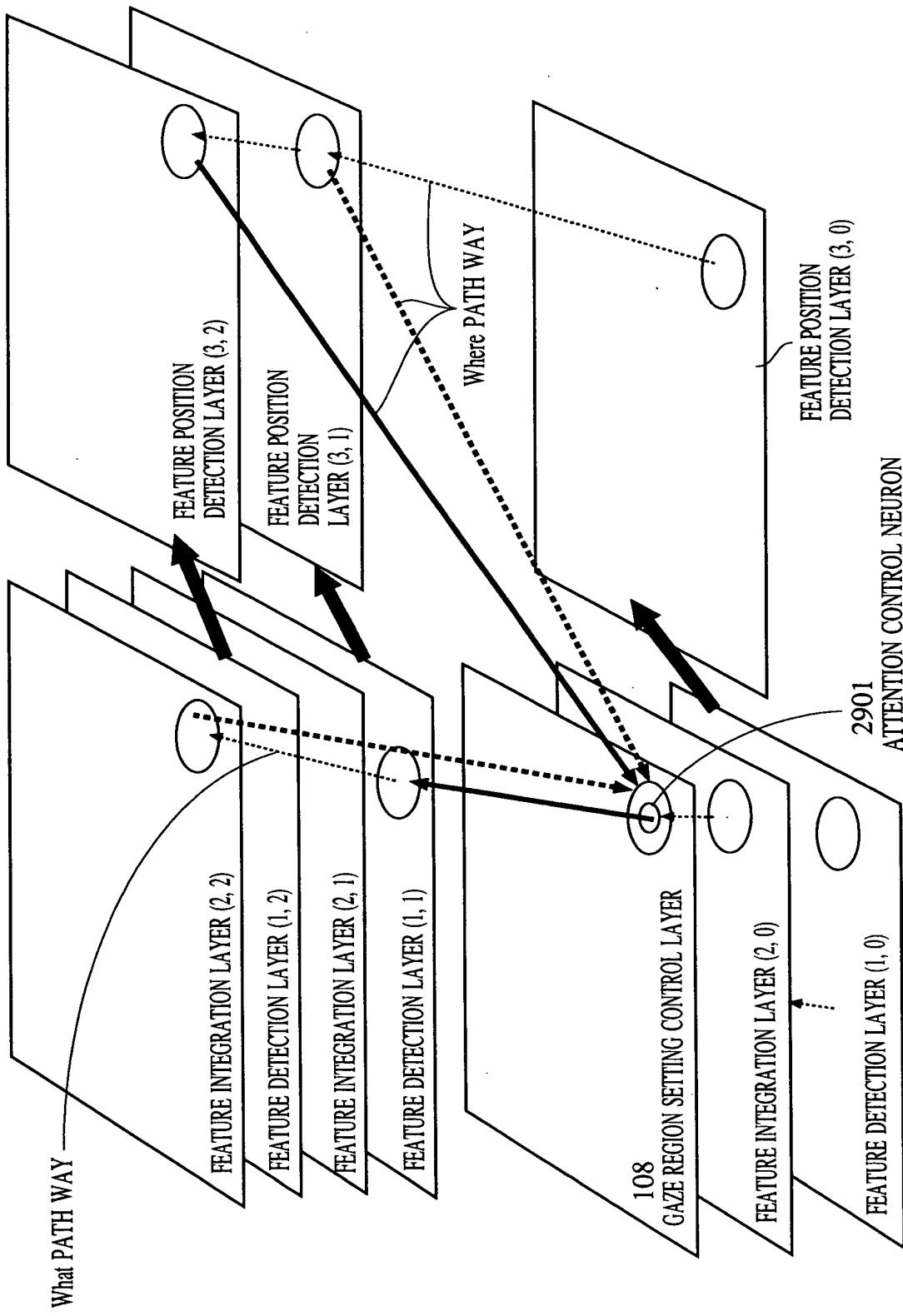


FIG. 30

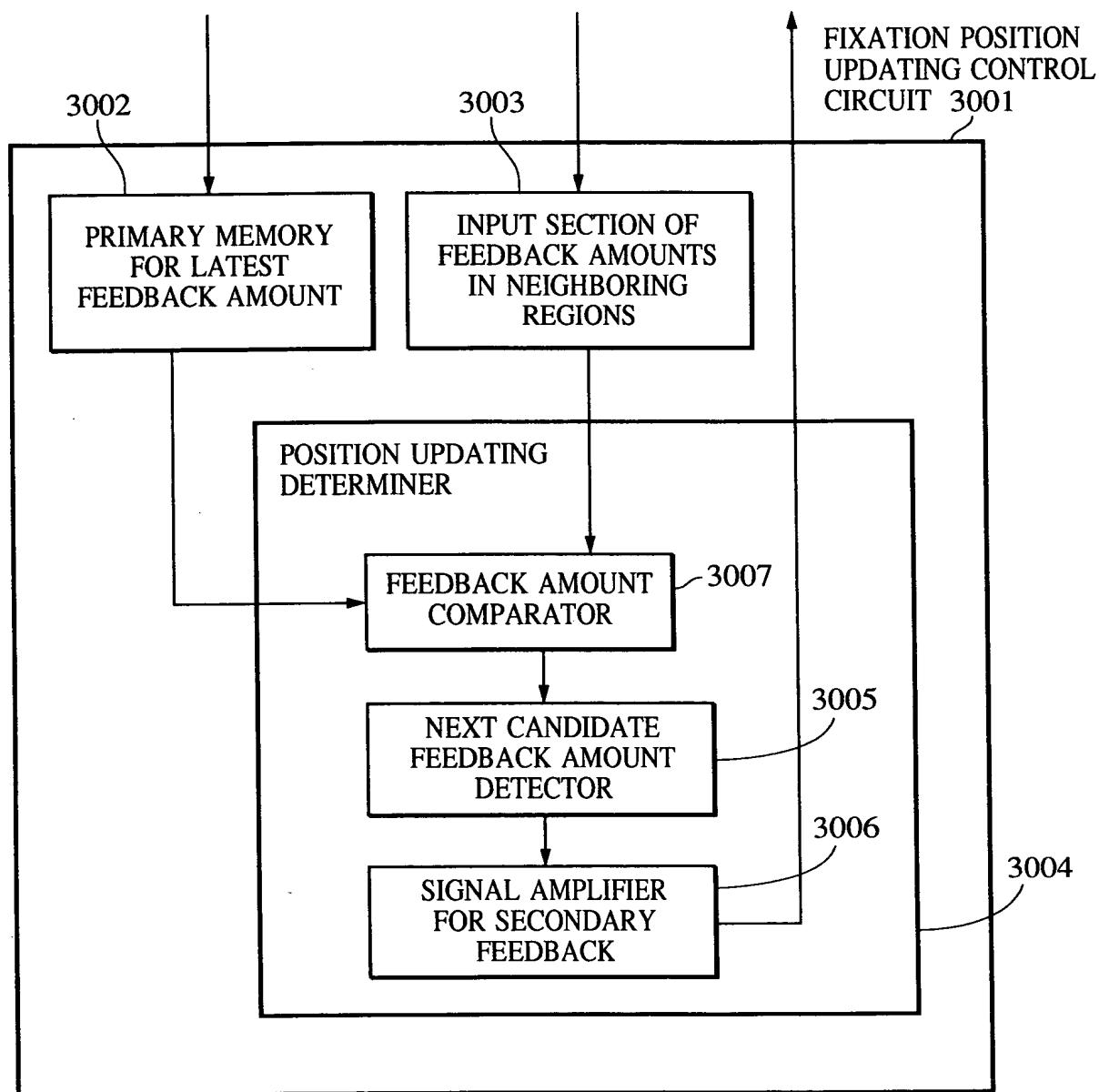


FIG. 31

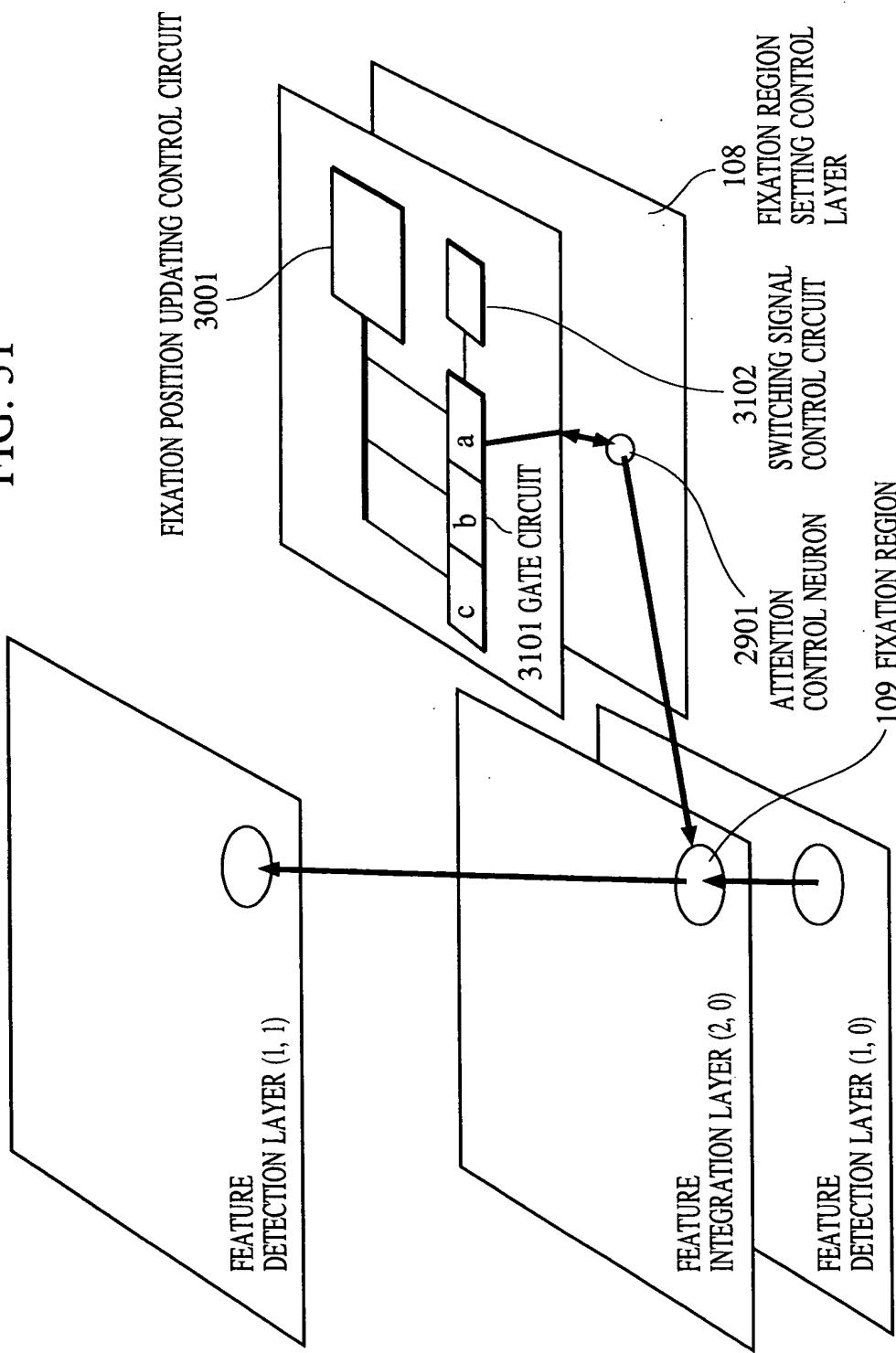


FIG. 32

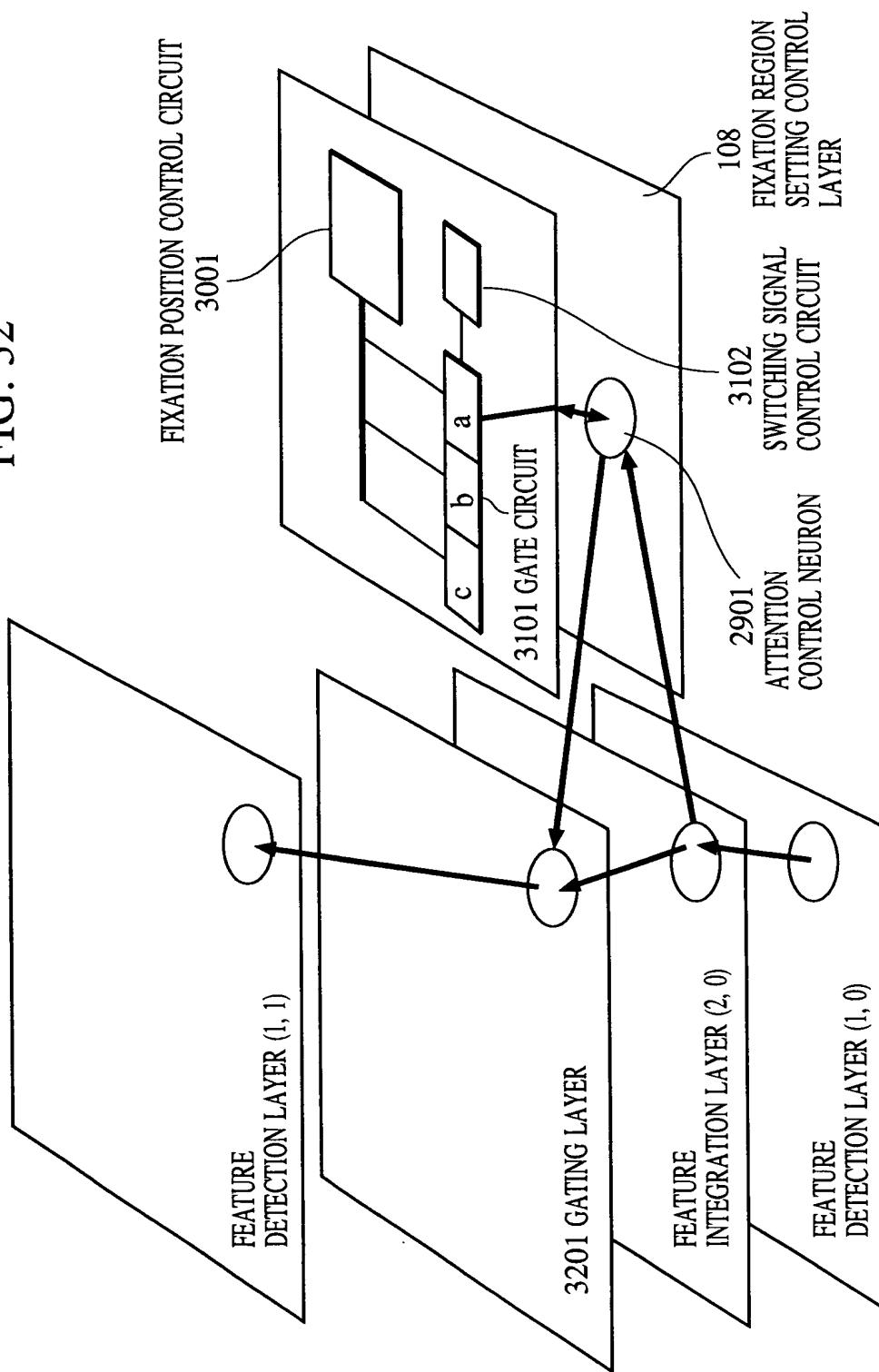


FIG. 33

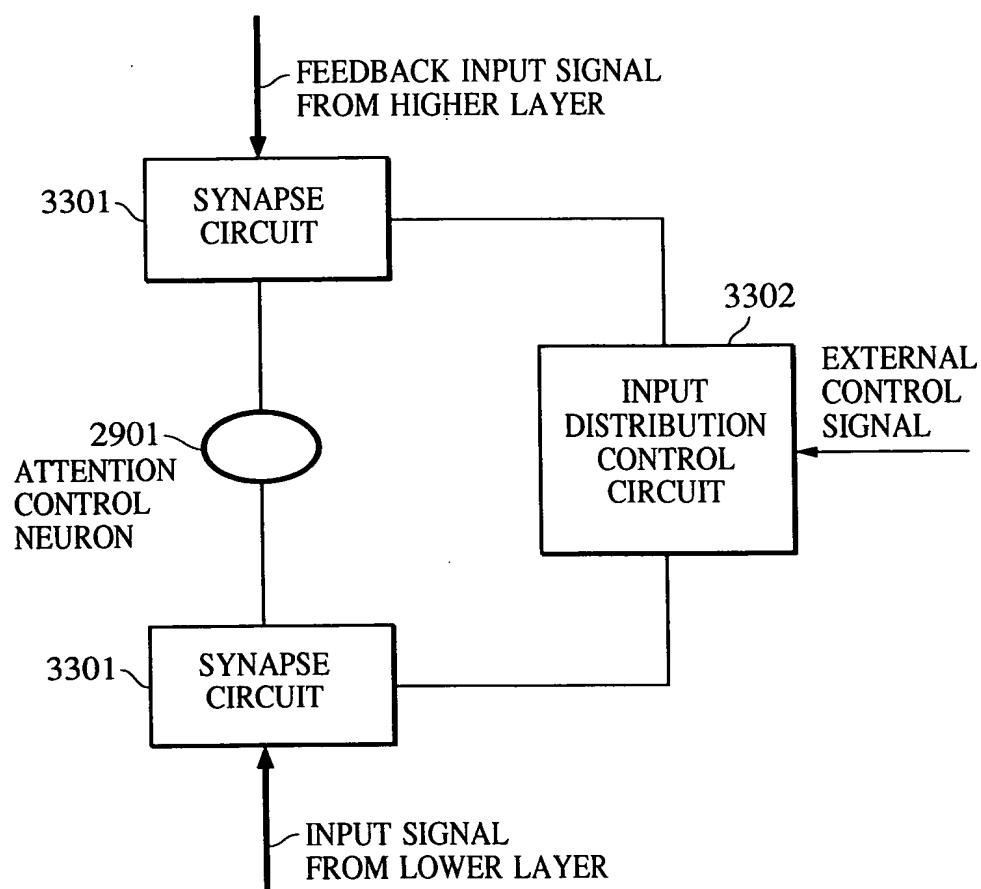


FIG. 34

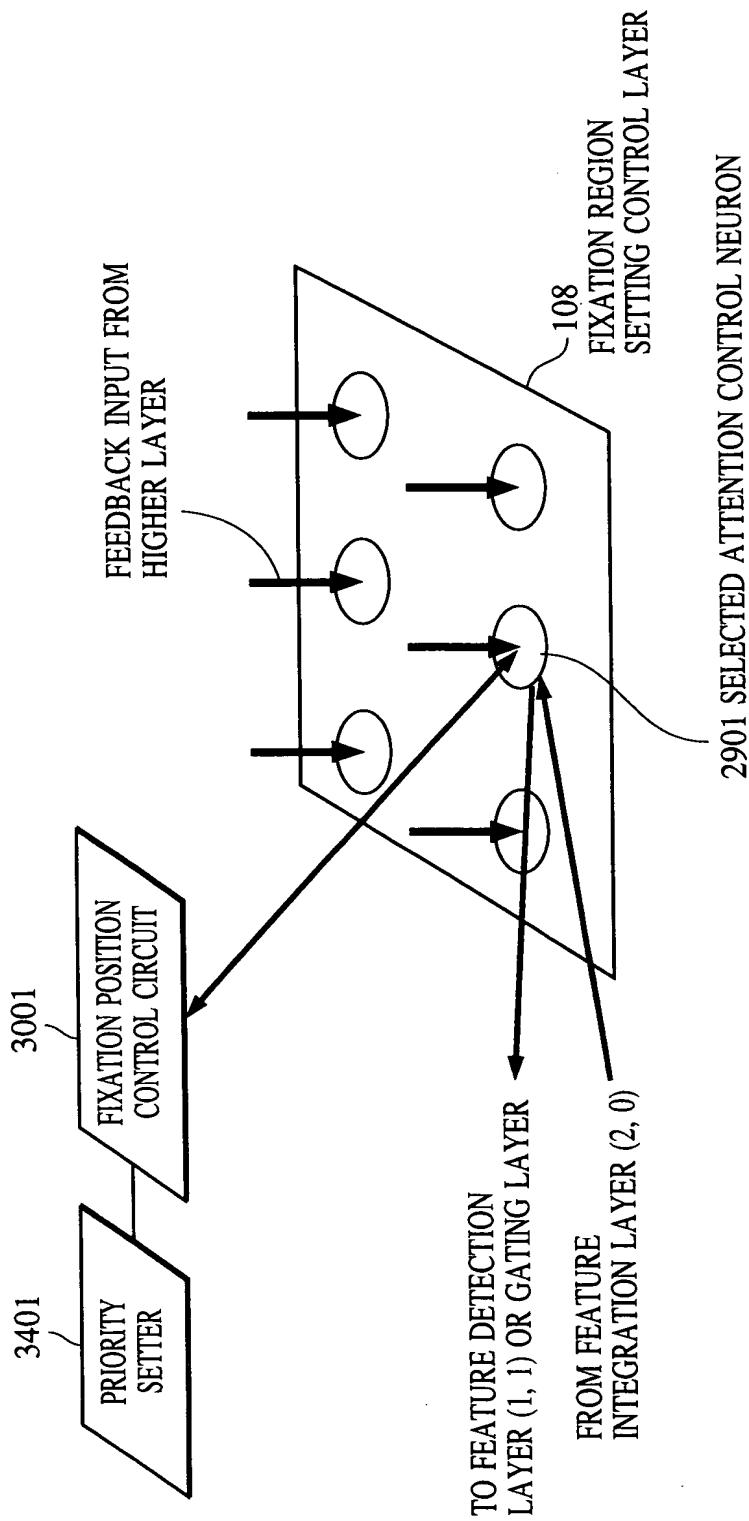
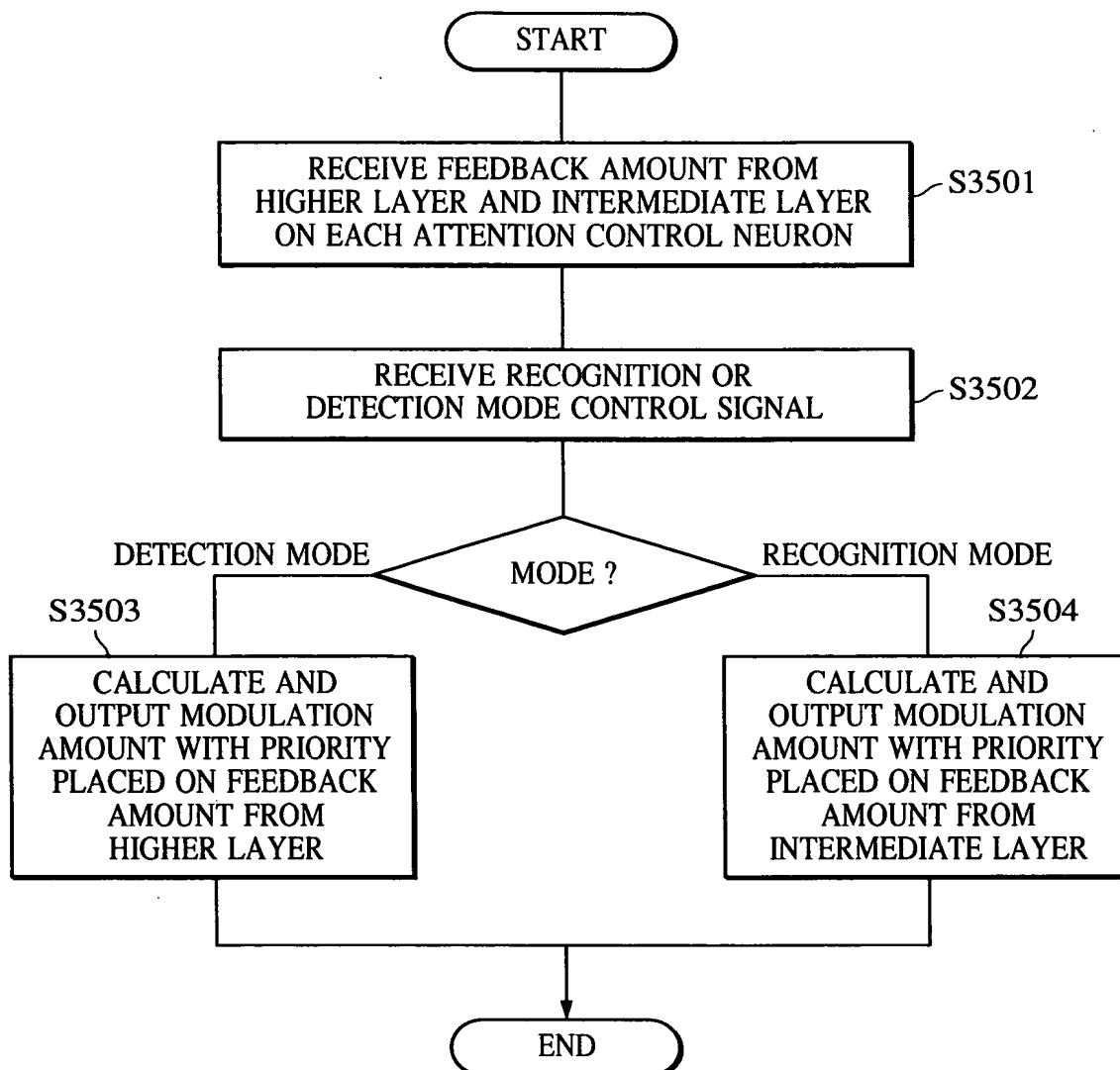


FIG. 35



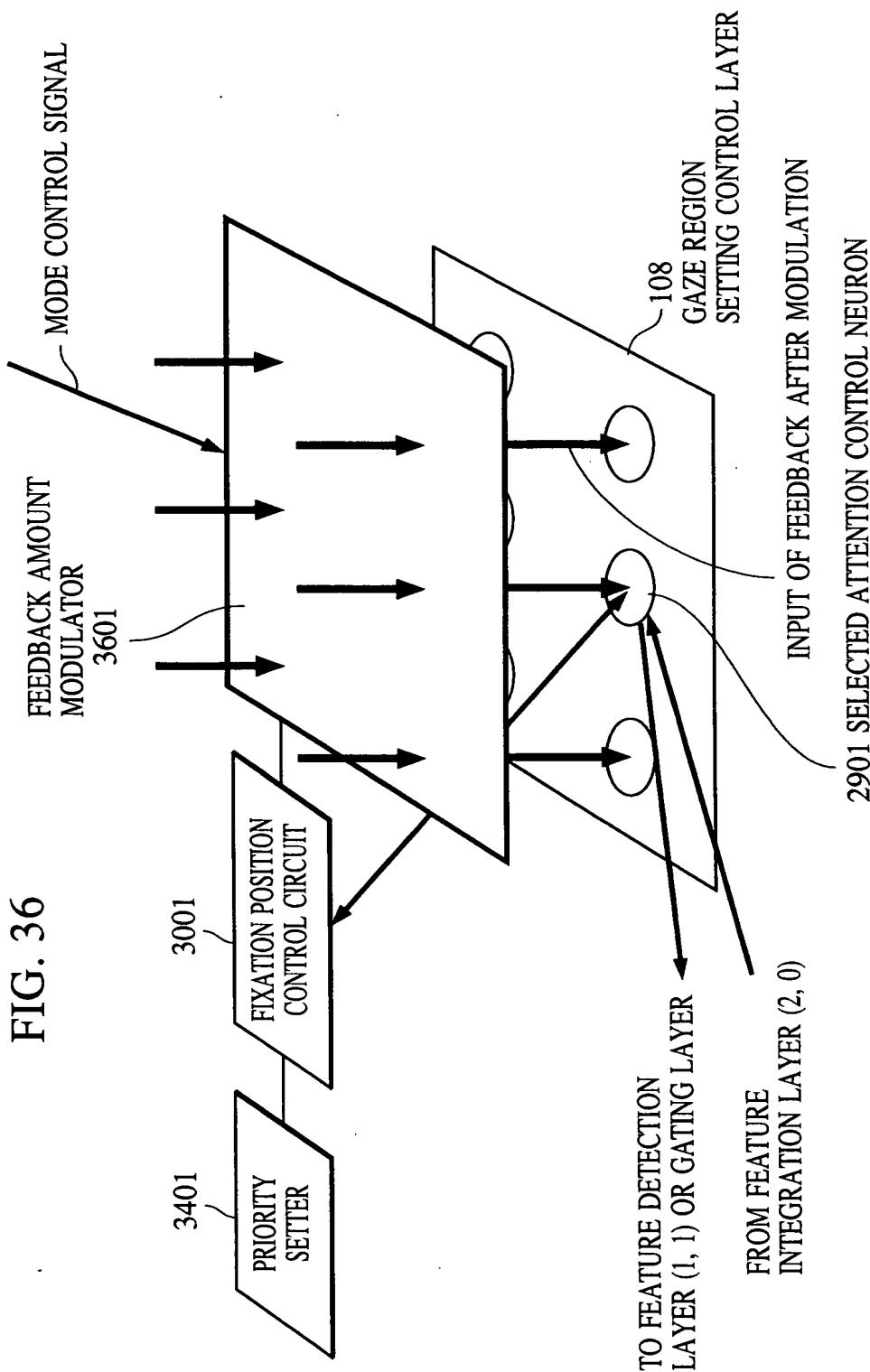


FIG. 37

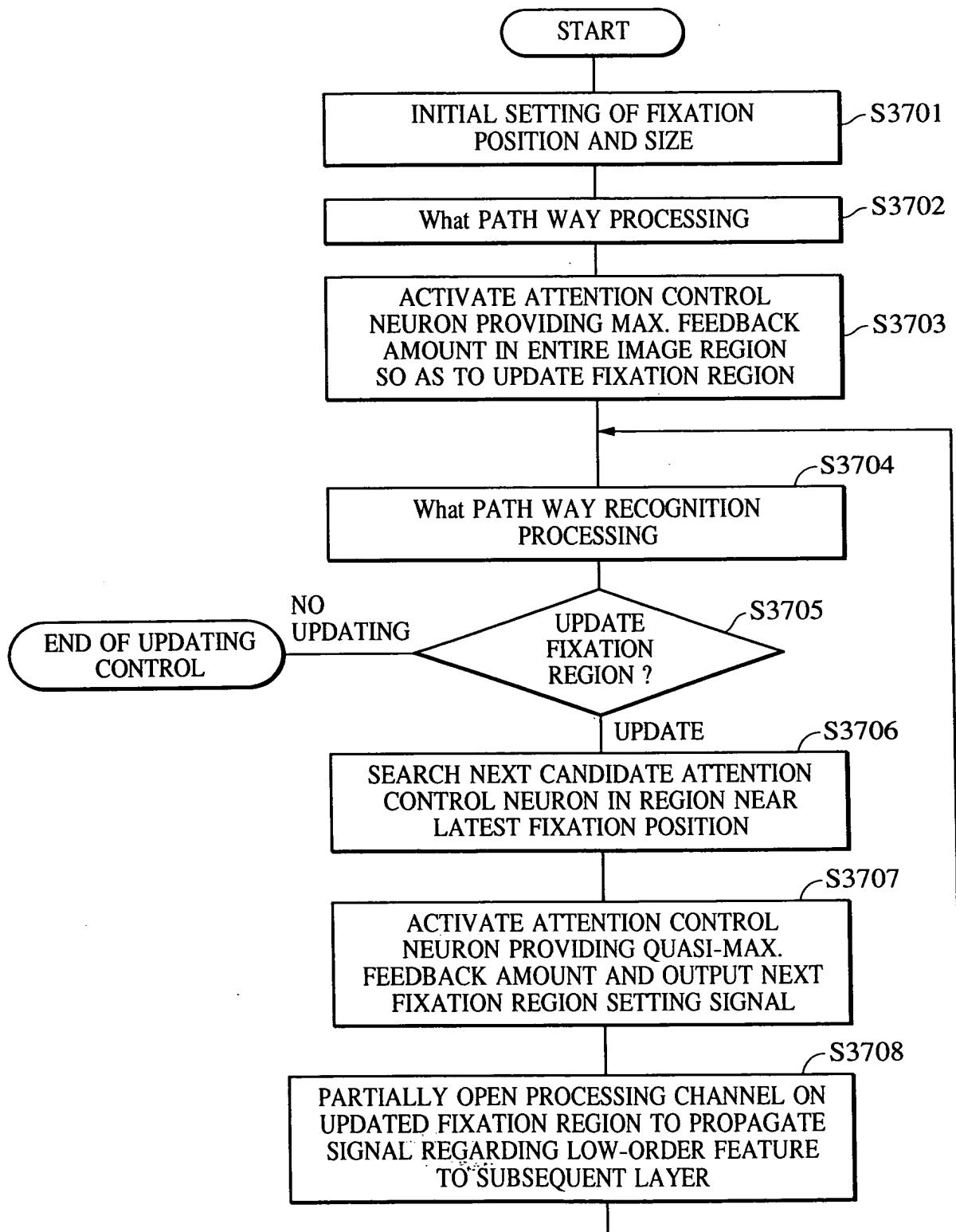


FIG. 38

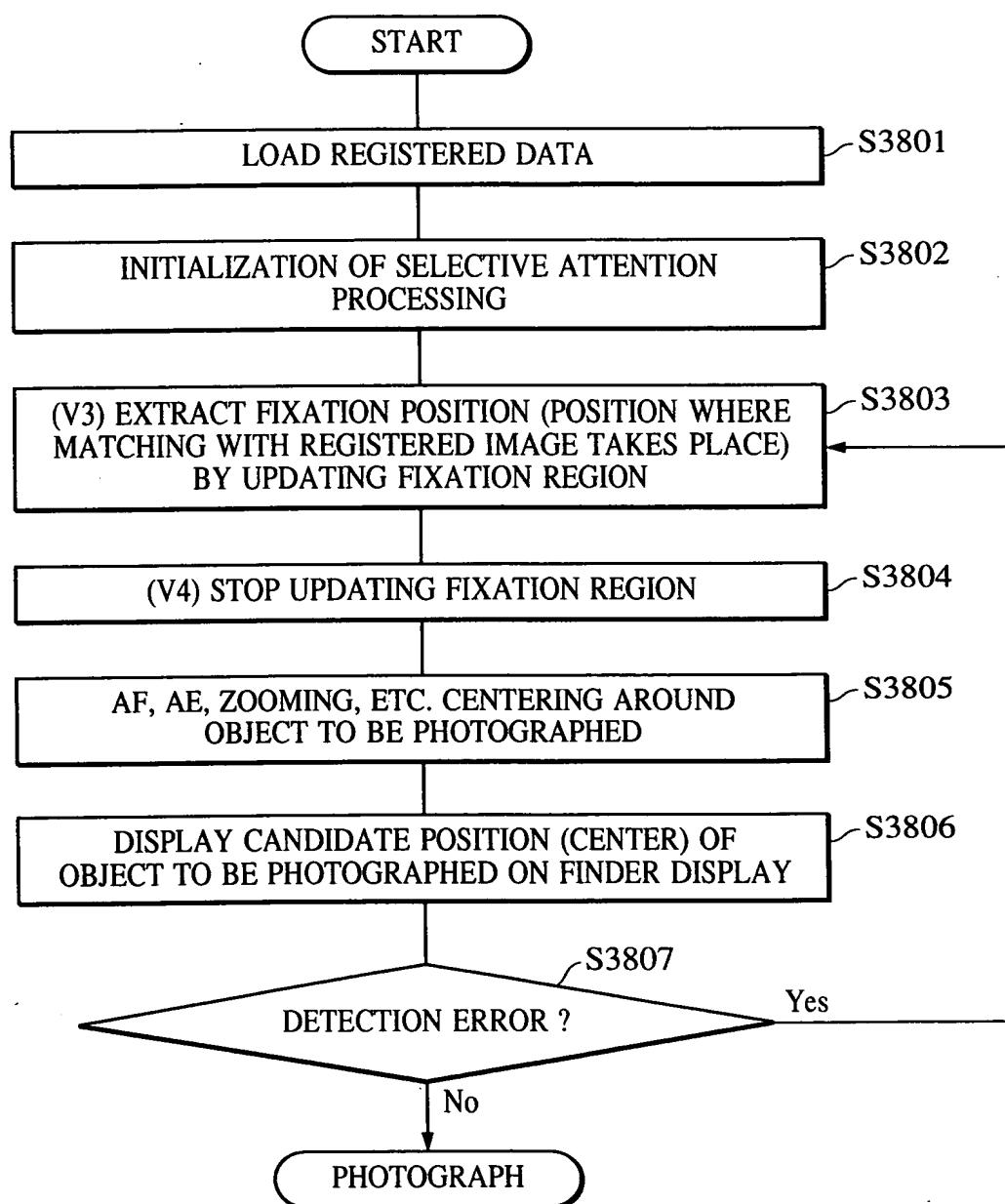


FIG. 39

